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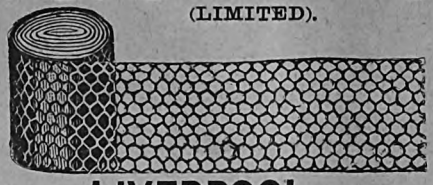

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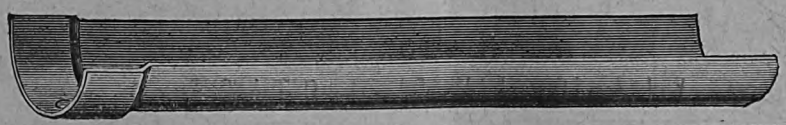

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[*Refer specially to page* vii.

Index to Advertisements, 35-39. Literary Contents, page 565.

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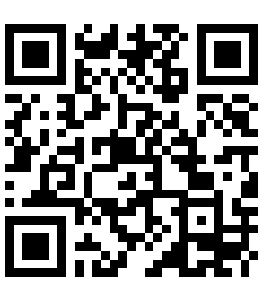

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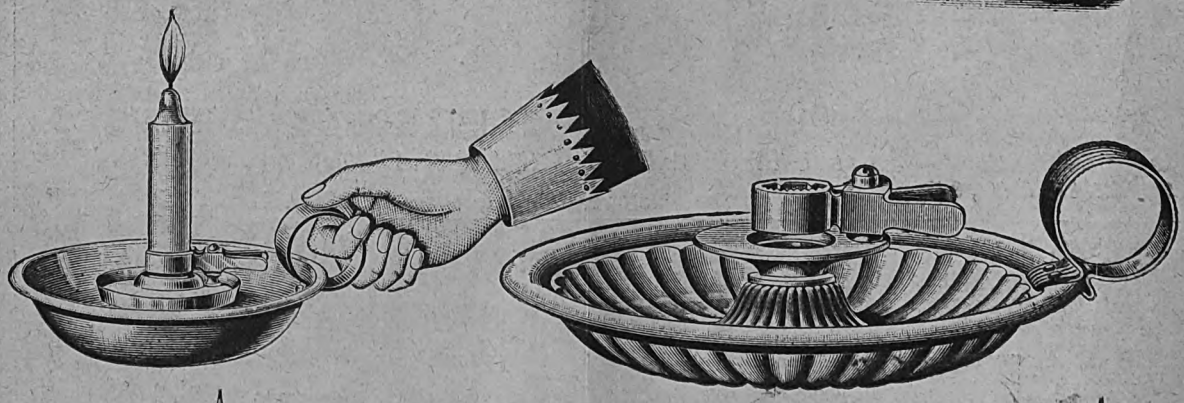

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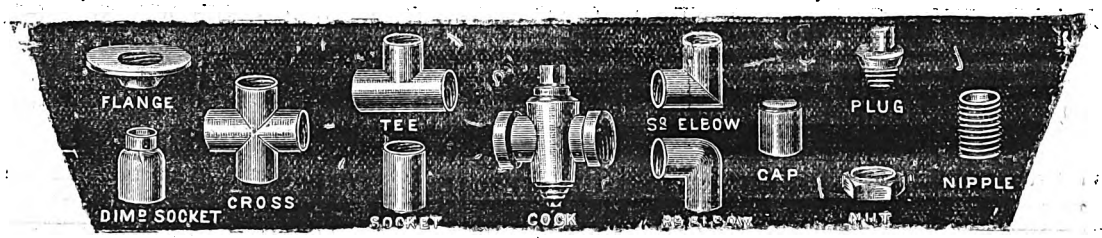

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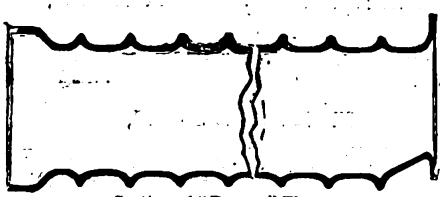

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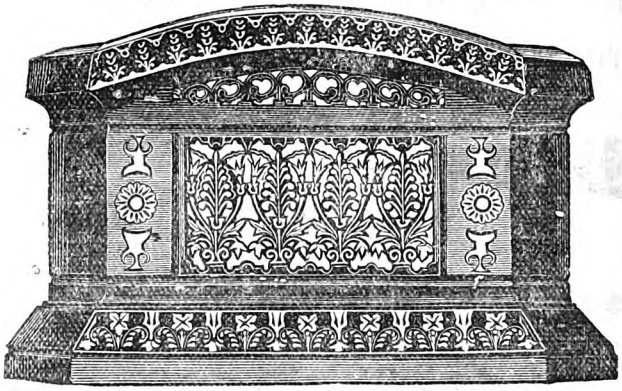

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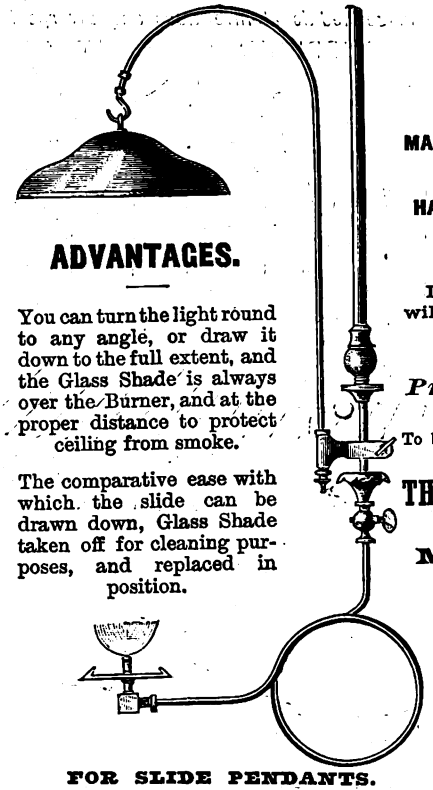

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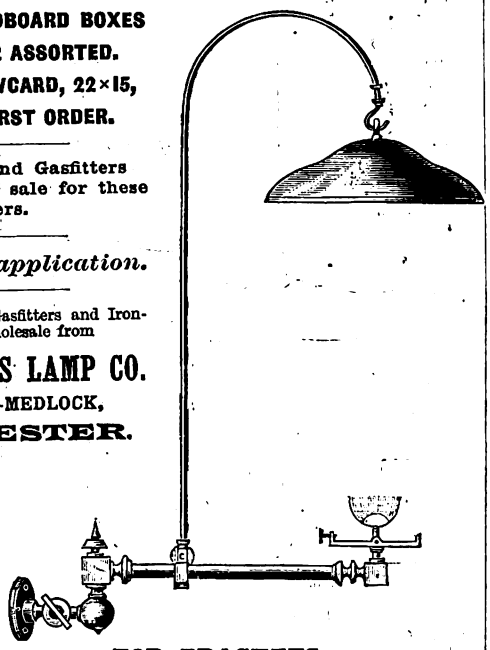

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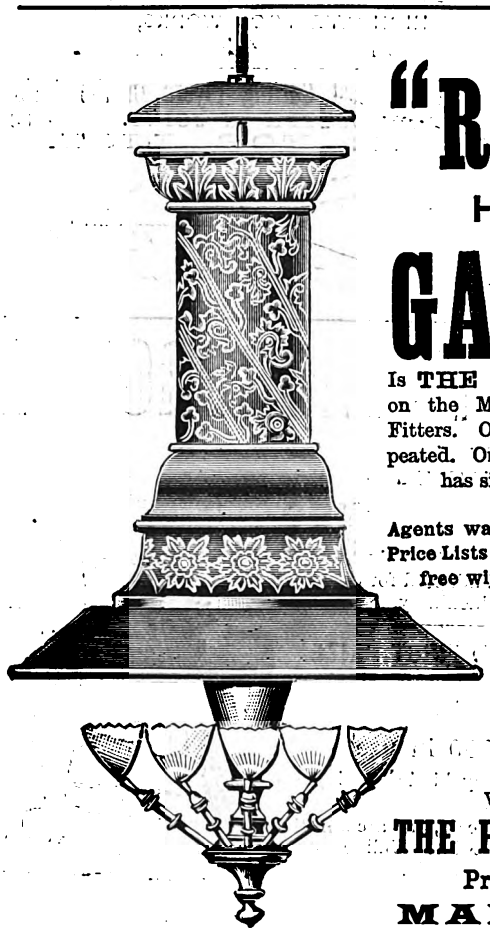

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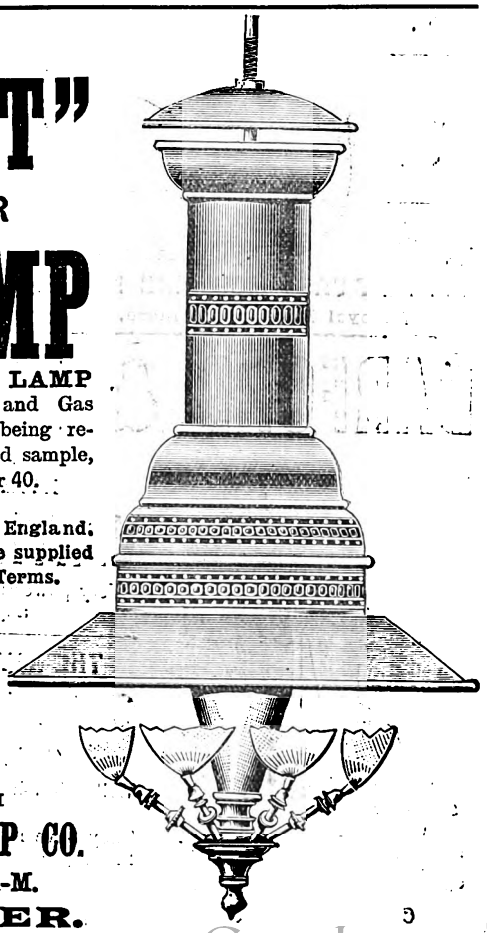

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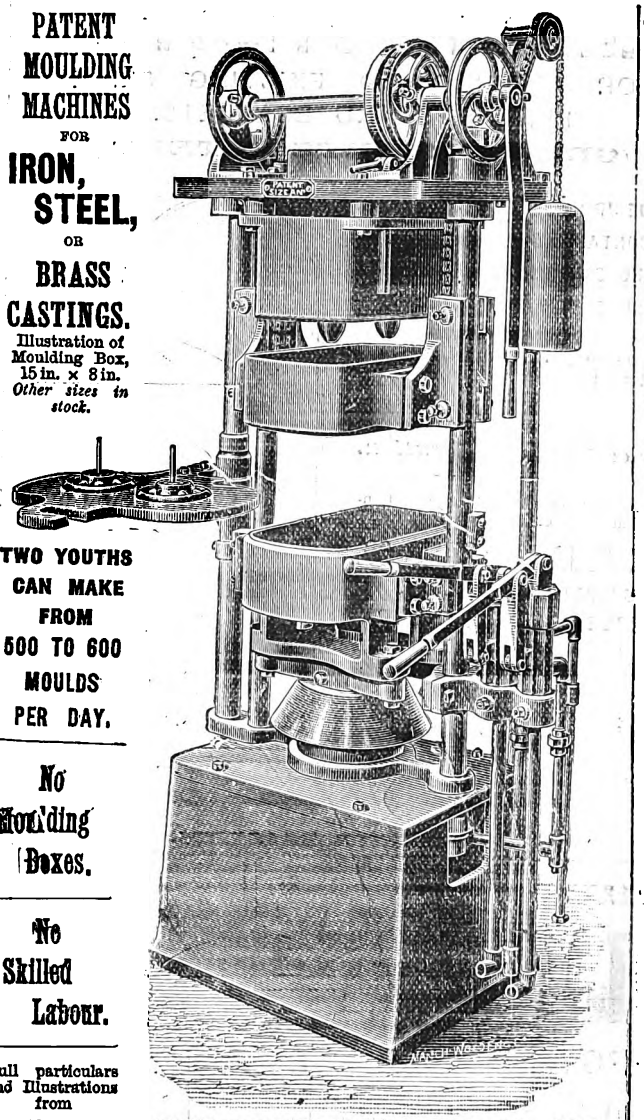

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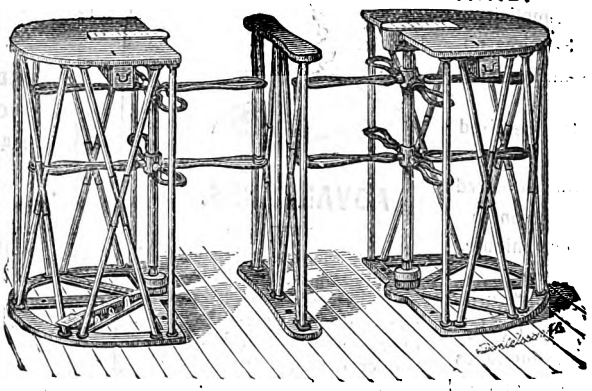

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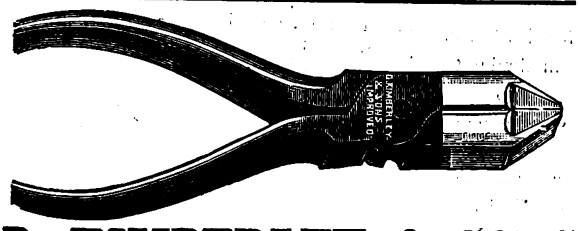

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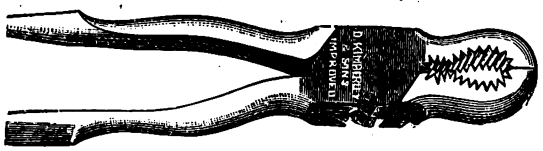

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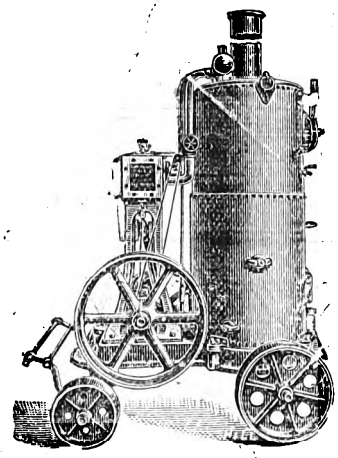

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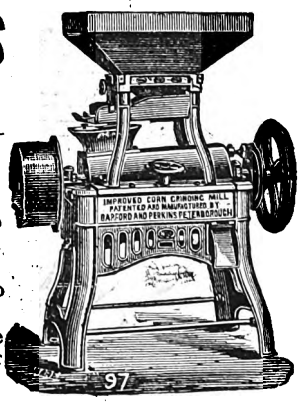

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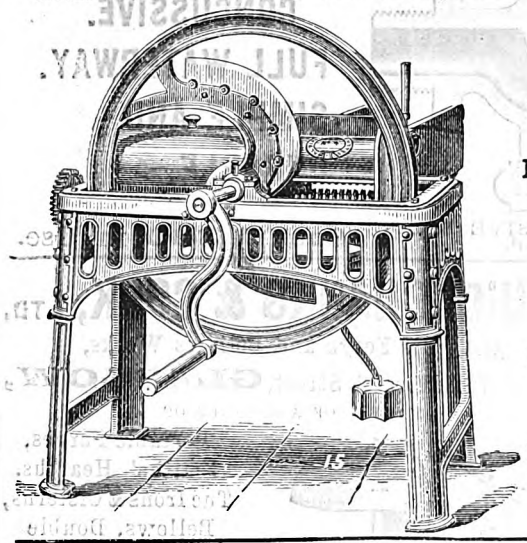

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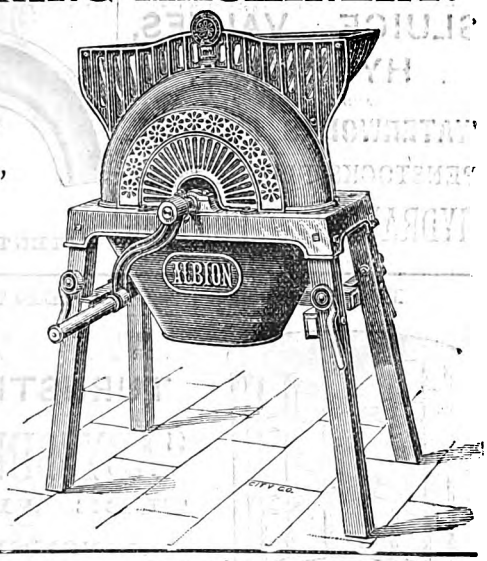

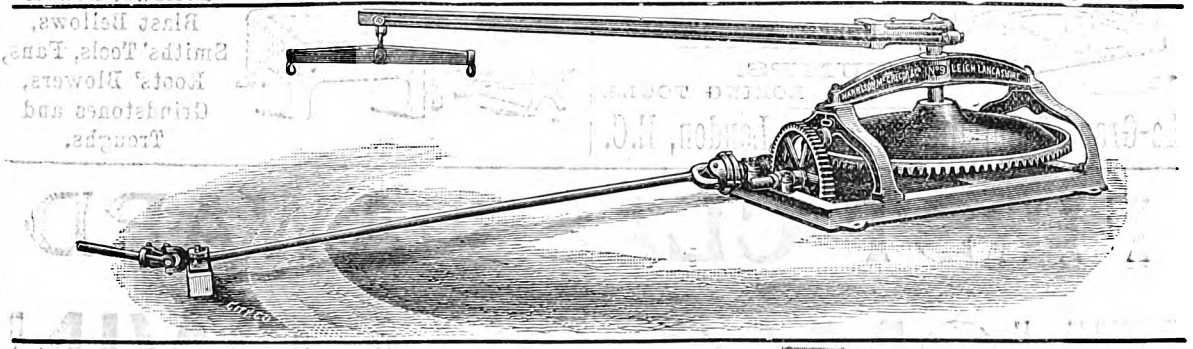

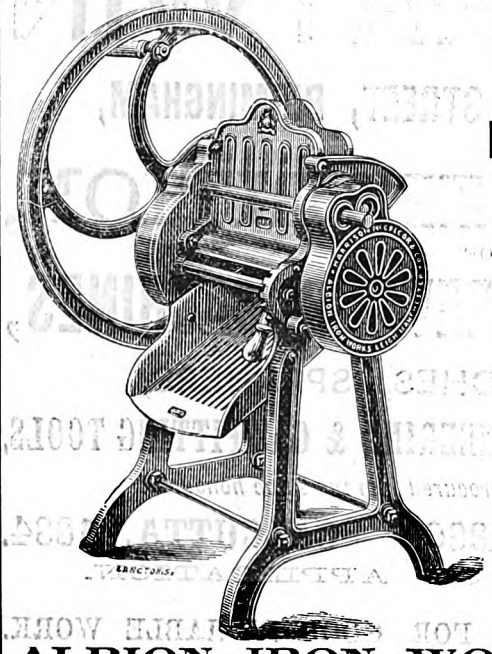

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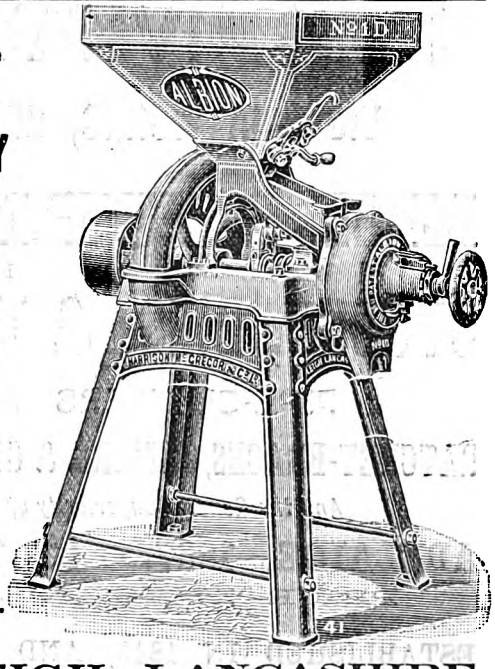

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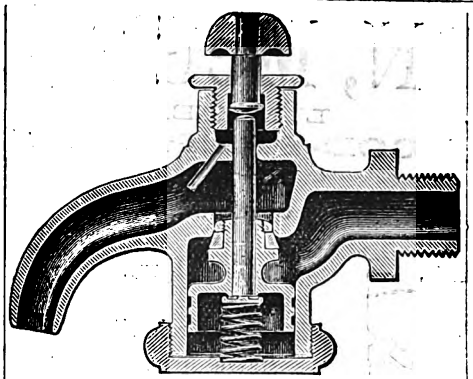

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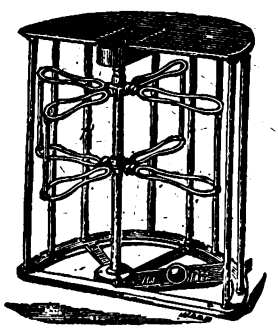

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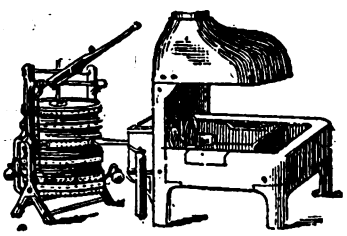

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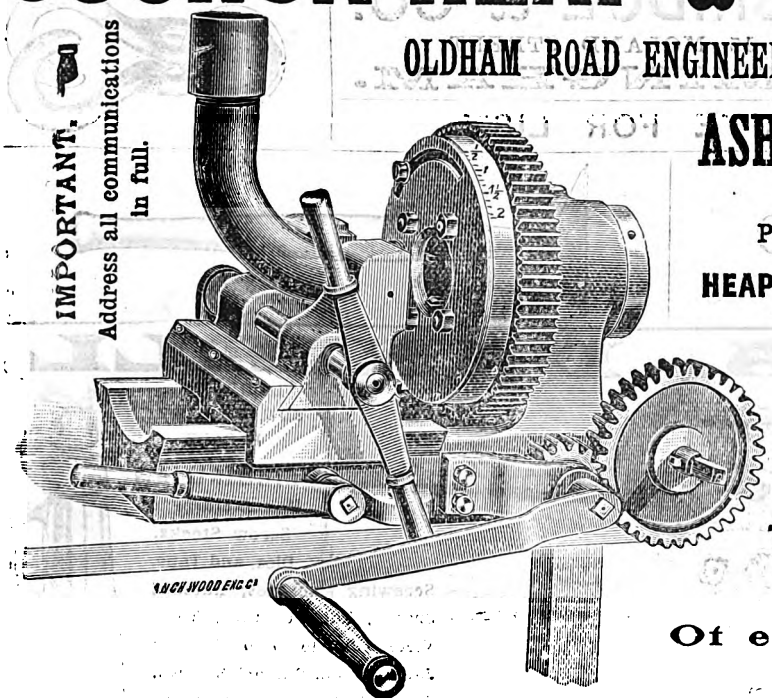

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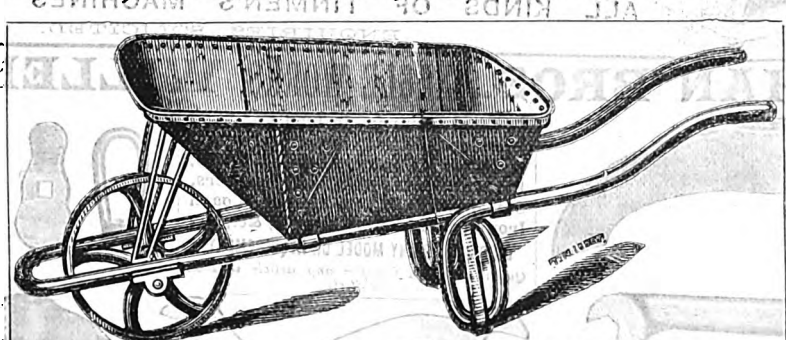
IRONWORKS, GASWORKS, CHEMICAL WORKS, &c.

Sizes and Prices ON Application.



FOR OTHER SHAPES SEE ILLUSTRATED SHOW CARD.

Sizes and Prices ON Application.

Telegraphic Addresses—{ "BRABY GLASGOW." / "COURTEOUS LONDON."

9

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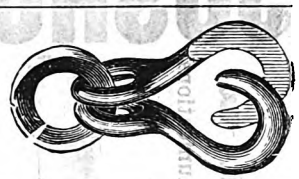
SHIPPING TACKLE.

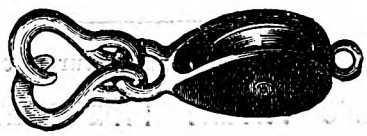
BEMBRIDGE & CO.

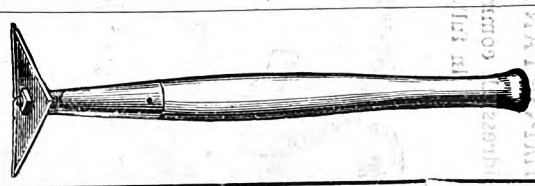
14 & 15 MOLAND STREET,

BIRMINGHAM.

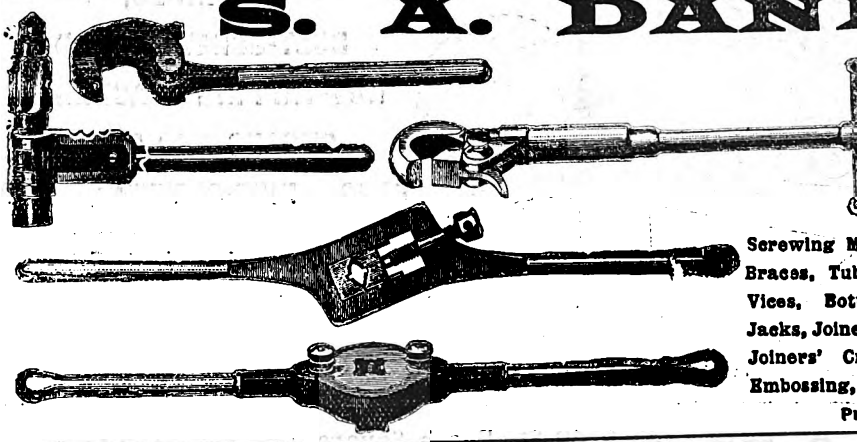
WRITE FOR LIST.





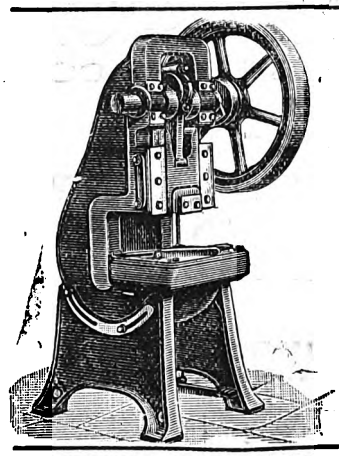


S. A. DANIELL,



LION WORKS,
EDWARD STREET,
PARADE,
BIRMINGHAM
Manufacturer of
Screw Stocks,
Dies, and Taps,
Screwing Machines, Ratchet Braces, Tube Cutters, Tube Vices, Bottle and Wagon Jacks, Joiners' Bench Screws, Joiners' Cramps, Copying, Embossing, Fly and General Presses, &c.

Telegrams:—"REDAN LIVERPOOL." Telephone No. 601.



THE ANGLO-AMERICAN TOOL CO.

JAMAICA STREET, LIVERPOOL,

MANUFACTURERS OF

CUTTING, DRAWING, EMBOSSING, RIVETING, AND DROP PRESSES.

FOR FOOT, HAND, OR BELT POWER.

SPINNING, TRIMMING, AND WIRING LATHES.

Complete Plants of Machines and Tools for making

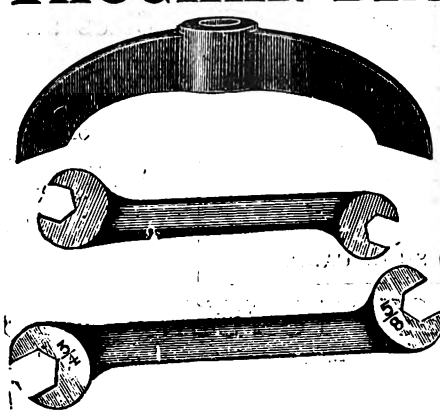
PETROLEUM CANS,

Buckets, Frypans, Saucepans, Milk Pans, Powder Flasks, Canisters, Boxes, and every variety of Sheet Metal Hollow-ware.

ALL KINDS OF TINMEN'S MACHINES AND TOOLS.

ENQUIRIES SOLICITED.

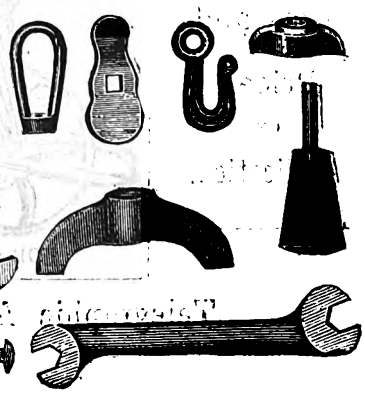
VAUGHAN BROS., EAGLE WORKS, WILLENHALL,



General Stampers in Iron and Steel for Agricultural Implements and Machinery, Engineers, Shipbuilders, Railway Contractors, Boiler-makers, Safe-makers, Cycle-makers, Coach Ironworkers, Ironfounders, &c., &c.

DIES CUT TO ANY MODEL OR REQUIREMENT.

Quotations given free for any article in Iron or Steel.



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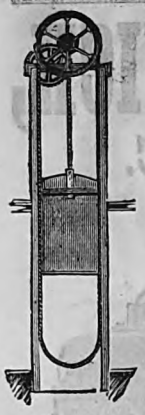


PICKERING, SWAIN & CO., LTD.

GENERAL ENGINEERS,

5 John Dalton Street, MANCHESTER.

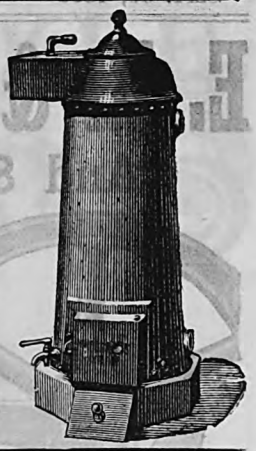
HOISTS, LIFTS, CRANES,

PULLEY BLOCKS, ELEVATORS,

BOILERS, PISTONS, HEATING APPARATUS, ETC.

WRITE FOR CATALOGUE NO. 10.

Works—HYDE. National Telephone—No. 1833, Manchester.
Telegraphic Address—"Hoisting Manchester."



THE BIRMINGHAM

CORRUGATED IRON Co.

ICKNIELD PORT ROAD BIRMINGHAM

MANUFACTURERS OF

GALVANIZED CORRUGATED SHEETS

RIDGE CAPPING, GUTTERS, SPOUTS

London Office:—LEADENHALL BUILDINGS, E.C.
Liverpool Office:—BALTIC BUILDINGS, REDCROSS STREET.

PARKES' CUT NAILS, FRYING PANS.

ONLY AWARD, Melbourne, 1880; HIGHEST AWARD, Sydney, 1879.
ONLY PRIZE, PARIS, 1867.

SHOE TIPS, HIGHEST AWARD, SYDNEY, 1879.

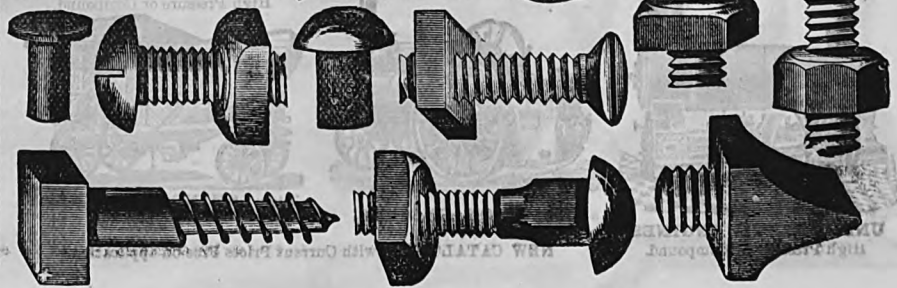
EAGLE WORKS, SMETHWICK.

HERBERT W. PERIAM

25 to 27 Floodgate St., BIRMINGHAM.
Telegraphic Address—'FLOODGATE BIRMINGHAM.'

AWARD, MELBOURNE EXHIBITION.

STOCK ... ... 250,000 GROSS.



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HAVE ALWAYS IN STOCK
(*In Iron or Steel*)
All sections of Bars, Angles, Tees, Rolled Girders, Rails, Hoops, Sheets, Nail Rods, Swedish Rods, Fencing and Telegraph Wire, Chequered Plate, Boiler, Tank, and Shipbuilding Plates.

HENDERSON & GLASS
IRON MERCHANTS
LIVERPOOL

HAVE ALWAYS IN STOCK
Bulbs, Bulb Beams, Tinned and Galvanised Sheets, Corrugated or Plain for working up, Coke & Charcoal Tin Plates, Terne & Canada Plates, Boiler, Gas, and Bedstead Tubing.

ALSO LEAD, PIG IRON, SPELTER, COPPER SHEETS, YELLOW METAL, &c.

Quotations on application. *Correspondence solicited.* *Shipping Orders promptly executed.*

HENRY WARRINGTON & SON,
BERRY HILL AND HOLLY BUSH COLLIERY AND IRON WORKS,
Near STOKE-UPON-TRENT, STAFFORDSHIRE.
MAKERS OF
HOOP IRON, BAR IRON, ANGLES, TEES,
HALF-ROUND, CONVEX, OVALS,
SHOEING IRON
Of superior quality, and a variety of other sections.
A Favourite Brand with Smiths and Engineers.
Registered Brand— WB
Buyers are invited to compare this Iron with more expensive kinds.
Manufacturers of White and Coloured
GLAZED BRICKS & FIRE BRICKS.
LONDON OFFICE, 91 CANNON STREET, E.C.
Telegraphic Address—"Warrington Stoke-on-Trent."

BIRMINGHAM BATTERY & METAL CO., BIRMINGHAM
MANUFACTURERS OF
SEAMLESS AND BRAZED COPPER AND BRASS TUBES,
Copper and Brass Wire, Rods, Sheets (polished and plain), Strips, &c.,
LOCOMOTIVE AND CONDENSER TUBES AND PLATES.
TELEGRAPHIC ADDRESS, "BATTERY SELLY OAK."

Tool Steel,
Files,
Steel Castings.
EDGAR ALLEN & CO., LD.,
IMPERIAL STEEL WORKS, SHEFFIELD.
Write for Prices and Illustrated List.

F. WIGGINS & SONS,
10 TOWER HILL, E., and 102 MINORIES, E.C.
LONDON.
Contractors to H.M. Government.
TELEPHONE No. 2248.
MICA
FOR LAMPS, STOVES, VENTILATORS, ELECTRICAL WORK, and all other purposes.
LARGEST STOCK IN THE WORLD.
See Price List, page 47, "IRONMONGER DIARY," 1893.

JAMES FAIRLEY & SONS,
MANUFACTURERS OF ALL KINDS OF
STEEL

AND SOLID STEEL FORGINGS
Old Mint, 10 Shadwell, Bramall Lane,
BIRMINGHAM & SHEFFIELD.
General Orders executed immediately from STOCK. Specialité in Forgings,
CIRCULAR BLANKS FOR MACHINISTS, CUTTERS, &c., &c.
1893

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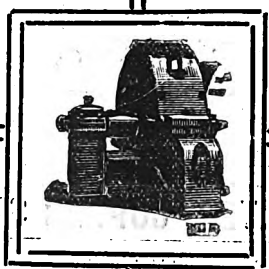
CARTER'S DISINTEGRATOR

Will Grind almost Anything.

IT IS EQUALLY SUCCESSFUL

In Pulverising, Granulating, or Shredding Animal, Vegetable, or Mineral Substances.



ANY MANUFACTURER,

Contractor, Miner, or Agriculturist,

Experiencing ANY DIFFICULTY IN TREATING ANY MATERIAL is invited to send a good Testing Sample and come and see it ground.

J. HARRISON CARTER,

82 MARK LANE, LONDON, E.C.
8 RUE DU LOUVRE, PARIS.

EXPORTERS

OF

MACHINERY, SHIPPERS, AGRICULTURAL IMPLEMENT AGENTS, &c., are especially invited to apply for full particulars and

Inspect this Useful Machine AT WORK.

Important Notice.

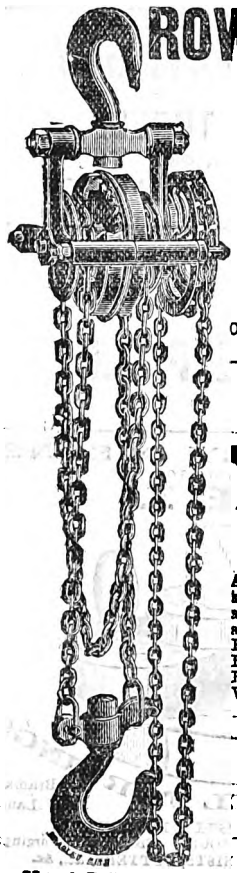
NEARLY ALL THE

MANURE MANUFACTURERS, BONE GRINDERS, CHEMICAL MANUFACTURERS, and CATTLE FOOD MAKERS throughout the KINGDOM

USE CARTER'S DISINTEGRATORS.

KINDLY MENTION THIS PAPER.

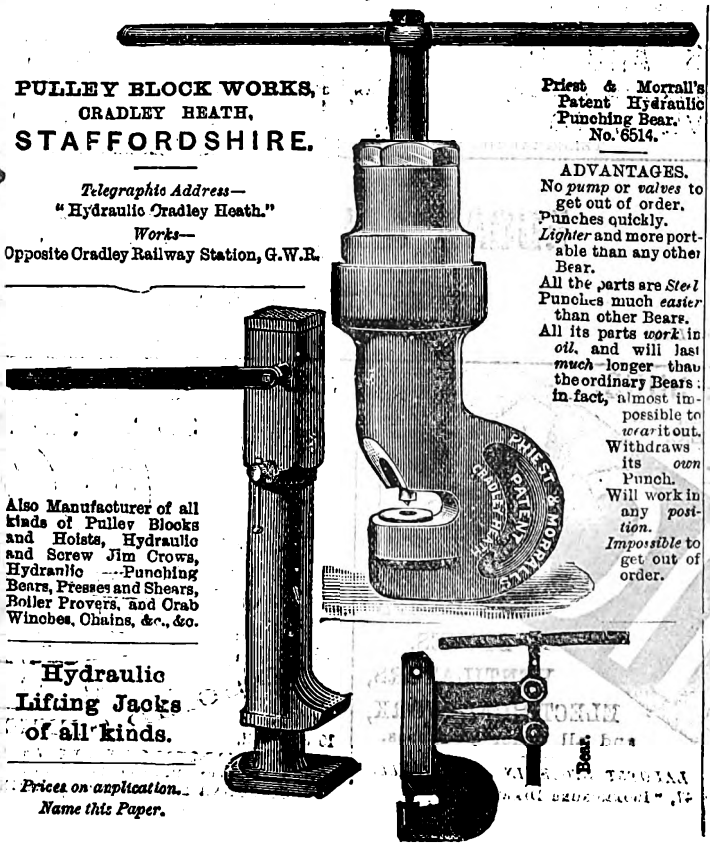
ROWLAND PRIEST, MANUFACTURER,



Moore's Pulley Blocks.

PULLEY BLOCK WORKS,
CRADLEY HEATH,
STAFFORDSHIRE.

Telegraphic Address—
"Hydraulic Cradley Heath."
Works—
Opposite Cradley Railway Station, G.W.R.



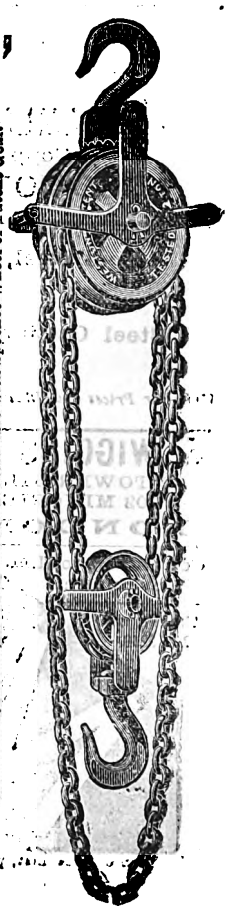
Priest & Morrall's Patent Hydraulic Punching Bear. No. 6514.

ADVANTAGES.
No *pump* or *valves* to get out of order.
Punches quickly.
Lighter and more portable than any other Bear.
All the parts are *Steel*
Punches much *easier* than other Bears.
All its parts *work* in *oil*, and will last *much* longer than the ordinary Bears: in fact, almost impossible to *wear* it out.
Withdraws its *own* Punch.
Will work in any *position*.
Impossible to get out of order.

Also Manufacturer of all kinds of Pulley Blocks and Hoists, Hydraulic and Screw Jim Crows, Hydraulic Punching Bears, Presses and Shears, Boiler Provers, and Crab Winches, Chains, &c., &c.

Hydraulic Lifting Jacks of all kinds.

Prices on application.
Name this Paper.



Weston's Pulley Blocks, with or without Guides: also with Spocket Wheel or Patent Gear.

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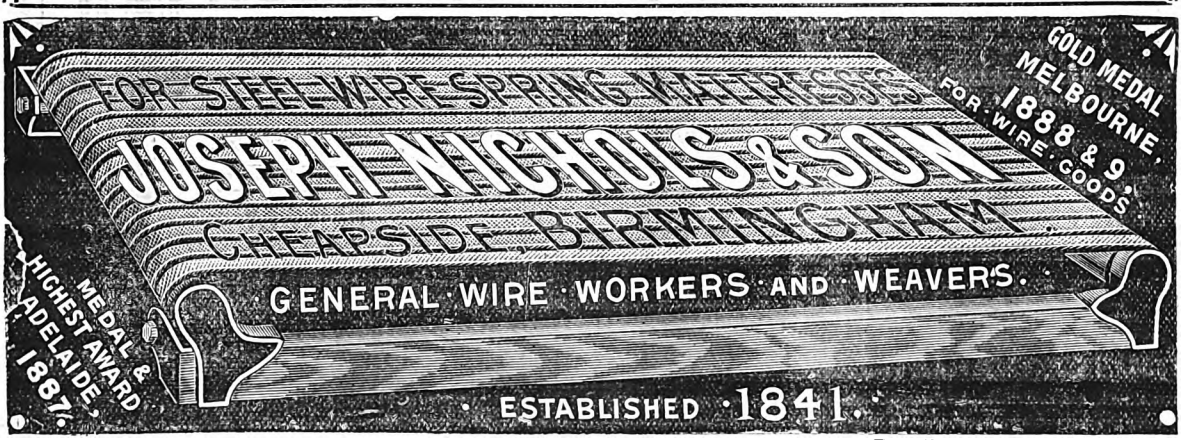
GANDY'S BELTING

THE OLDEST, THE BEST, THE CHEAPEST.

Wheatland Works, SEACOMBE.
130 Queen Victoria St., LONDON.
Guardian Buildings, Cross Street, MANCHESTER.
220 Ingram Street, GLASGOW.


FOR STEEL WIRE SPRING MATTRESSES
JOSEPH NICHOLS & SON
CHEAPSIDE BIRMINGHAM
GENERAL WIRE WORKERS AND WEAVERS.
ESTABLISHED 1841.
GOLD MEDAL MELBOURNE, 1888 & 9.
FOR WIRE GOODS
MEDAL & HIGHEST AWARD ADELAIDE, 1887.

LONDON AGENT:—G. ADLAM, 58 HOLBORN VIADUCT.

EDWARDS & BARNES,

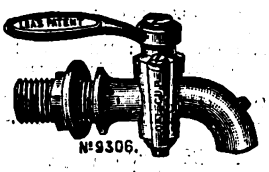
MANUFACTURERS OF STAMPED BRASSFOUNDRY, FANCY NAILS, CURTAIN CHAINS, CURLING IRONS, SMALL SPECIALITIES, PATENTS, ETC.

THE MODERN HOOK.

PRICE LIST SENT ON APPLICATION.

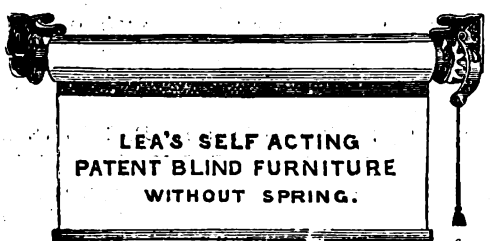
LION STAMPING WORKS, 237 BROAD STREET, BIRMINGHAM.

MERCHANTS AND SHIPPERS SUPPLIED ON THE MOST LIBERAL TERMS.

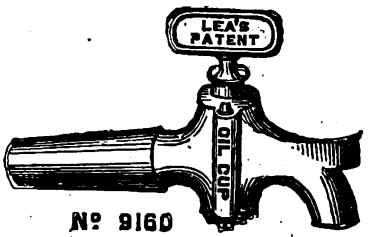


LEA'S Patent all-iron Self-oiling Range.

½in.	⅝in.	¾in.	⅞in.	1in.
30s.	36s.	42s.	52s.	60s



ALL BRASS 3053 40/- 1¼ IN 3069 29/-



No 9160

LEA'S Patent all-iron Self-oiling Butt, Bib, Ball, and Stop Cocks.

½in.	⅝in.	¾in.	1in.	1¼in.
21s.)	25s.	32s.	40s.	48s.	69s.

The great advantage in this Cock is the Oil Chamber, which prevents the Plug becoming fixed when in use. They offer no inducement to theft; as Old Iron they are worthless.

To be had of all respectable Ironmongers.

W. LEA & CO., WOLVERHAMPTON,

GENERAL COCK AND BRASS FOUNDERS.

DRAWINGS OF THE ABOVE ON APPLICATION.

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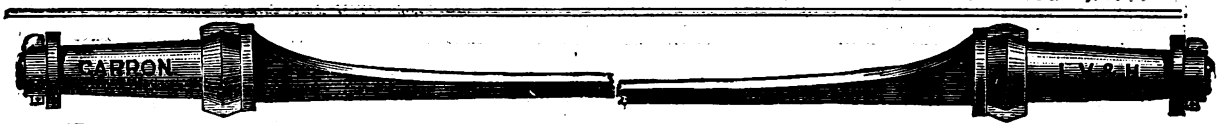


REGISTERED AXLE BRAND.

V L H S

LONES, VERNON & HOLDEN

REGISTERED IRON BRAND

L. V. & H.

SANDWELL IRON AND AXLE WORKS,

SMETHWICK, ENGLAND,

MANUFACTURERS OF

PATENT COLLINGS, MAIL, SHORT BOLT MAIL AXLETREES.

Screwed End Arms with Iron Nut and Linch Pin.

OMNIBUS AND CAB AXLES.

CART & WAGON ARMS, DRABBLE'S PATENT VAN ARMS, AUSTRALIAN AND WEST INDIAN DRAY AXLES & AMERICAN PATTERN BUGGY AXLES;

ALSO MANUFACTURERS OF

Merchant Bars, Rounds, Flats, Tees, Channel, Angles, Ovals, Square Edge and Feather Edge Half Rounds.

REGISTERED AXLE BRAND. W. ORME

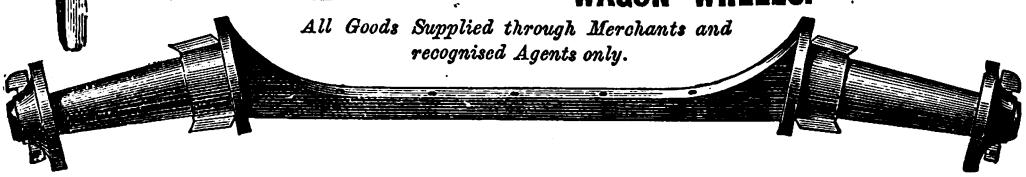
SPECIAL RIVET IRON.

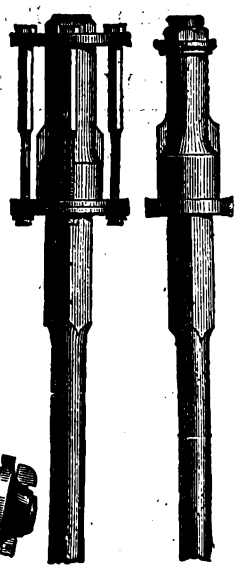
Best, Best Best, and Treble Best Qualities Imitation Swedish Iron.

REGISTERED IRON BRAND SANDWELL BEST

SPECIAL SPOKES FOR RAILWAY WAGON WHEELS.

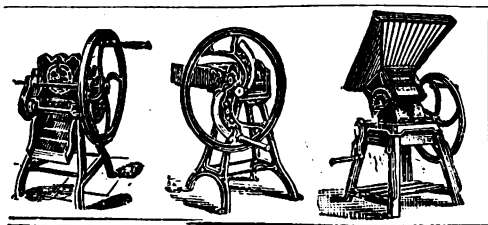
All Goods Supplied through Merchants and recognised Agents only.





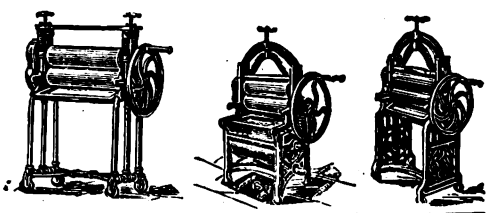
W. & S. SUMMERSCALES' SONS

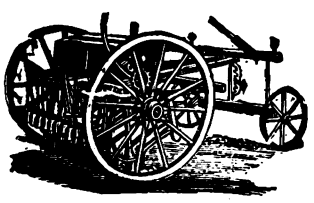
PARKSIDE WORKS, KEIGHLEY.



TELEGRAMS:—

"SCALES KEIGHLEY."





JAMES SMYTH & SON'S (LIMITED) PATENT

'NONPAREIL' CORN DRILL

THE MOST PERFECT AND HANDIEST DRILL OUT.

Far ahead of anything yet invented. **3,000** *now in use. Made in Various Patterns to suit all countries. Can be had with American Hoe-Coulters, if desired. The Oldest Drill Manufactory in the World.*

PRIZE MEDALS—London, 1862; Paris, 1867-1878-1889; Vienna, 1873; Sydney, 1880; Melbourne, 1881.

The Patent Hoppers, by tilting on one side, allow the Cup Barrel to be taken out and replaced in two minutes.

Peasenhall, SUFFOLK; and PARIS (8 Rue Philippe de Girard).

IRON TANKS AND CISTERNS.

JOHN LYSAGHT, LIMITED, St. Vincent's Iron Works, BRISTOL.

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THE UNITED

HORSE SHOE AND NAIL CO., LIMITED,

Cubitt Town, London, E.

Manufacturers of Horse Shoes and Nails to the British Army.

ALSO OF

THE ROWLEY PATENT HORSE SHOES AND IRON.

MANUFACTURERS OF

PATENT STEAM HAMMERED

HORSE, MULE, AND PONY SHOES.

which may be advantageously applied cold.

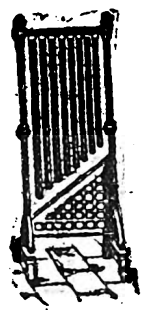
THE PATENT BRIGHT READY POINTED

GLOBE HORSE NAIL.

Contractors to all the chief Tramway and Omnibus Companies in the United Kingdom.

Price List and Terms on Application.

HARRINGTON'S



TUBE CHIMES FOR HALLS

AND FOR

MUSIC IN THE HOUSE (PATENT)

The Sweetest Form of Dinner Call.

The Best Form of Gift.

Set (8) Bells, plated, 1½ in. diameter, on walnut stand	£10 0 0
Set (8) Bells, plated, 1 in. diameter, on walnut stand	6 6 0
Set (8) Bells, plated, 1 in. diameter, on mahogany bracket	4 0 0

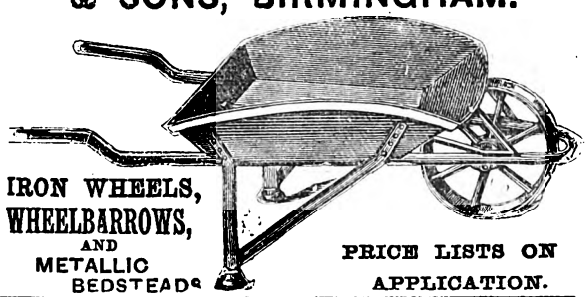
For further particulars and prices of other sizes apply to

HARRINGTON, LATHAM & CO., Fleet Works, COVENTRY.

LONDON SHOW ROOMS: 67 BARBICAN, E.C.

BRIERLEY

& SONS, BIRMINGHAM.



IRON WHEELS, WHEELBARROWS, AND METALLIC BEDSTEADS

PRICE LISTS ON APPLICATION.

THE "PUTNAM" NAIL CO., BOSTON, U.S.A.

HOT FORGED AND HAMMER POINTED HORSE-SHOE NAILS.

Large Stock kept on hand and orders executed promptly. *Prices on application to Agents.*

JOHN C. PLIMPTON & CO., AMERICAN IMPORT & EXPORT MERCHANTS,

82 GREAT EASTERN STREET, E.C.; and at 65 & 67 Victoria Street, Liverpool.

Telegraphic Addresses:—"BRAZILEIRO LONDON," "PUTNAM LIVERPOOL."

HENRY SHAW & SONS, Park St., BIRMINGHAM

ESTABLISHED 1799),

NAIL, CHAIN, AND RIVET MANUFACTURERS.

SOLE AGENTS FOR "RIFLE BRAND" BRIGHT-POINTED HORSE NAILS.

Chain Warehouse—FOXOAK STREET, CRADLEY HEATH.

HEPTON & SON, LEEDS.

Send for Prices and Drawings of

HEPTON'S REGISTERED COPPER CYLINDER

Will stand Double the Pressure of an ordinary one same strength, and Cheaper.

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CUT NAILS IN IRON, STEEL, COPPER, AND ZINC
OF ALL DESCRIPTIONS,
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SHOE HEEL & TOE TIPS AND PLATES. SHOE BILLS AND SHOE RIVETS.

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THE IRONMONGER AND UNIVERSAL ENGINEER

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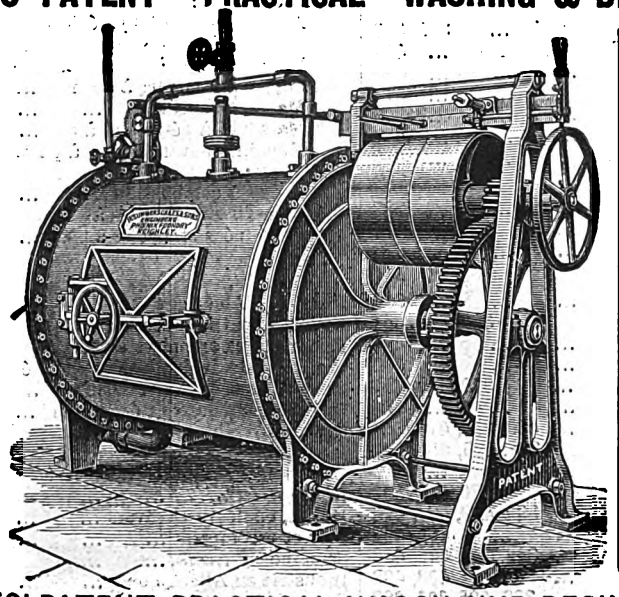

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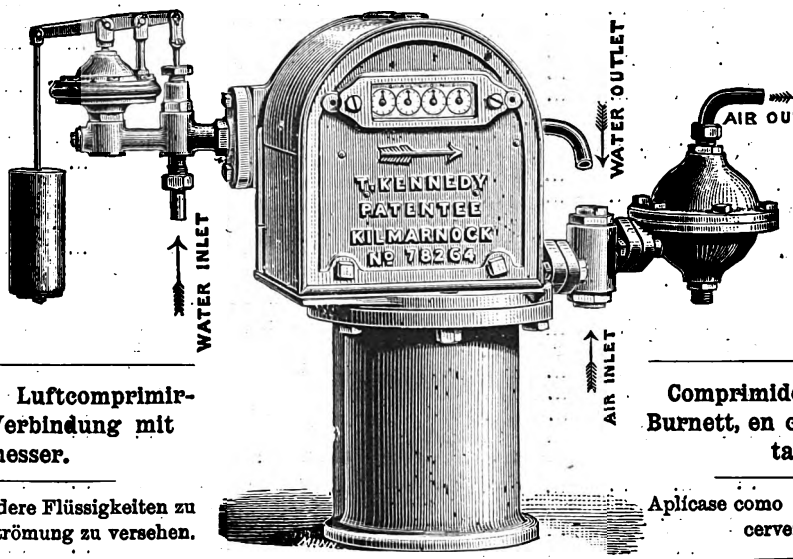
Kennedy's Patent Water Meter Co., Ltd.

KILMARNOCK, SCOTLAND.

AWARDED 9 PRIZE MEDALS.

KENNEDY & BURNETT'S AIR COMPRESSOR AND WATER METER COMBINED.

For application as a Beer Engine, for raising and aërating Beer or other Liquids.



Compresseur d'air Kennedy-Burnett, combiné avec le compteur d'eau.

S'emploie comme machine à élever ou à aspirer la bière ou autres liquides.

Kennedy-Burnett's Luftcomprimir-Vorrichtung in Verbindung mit Wassermesser.

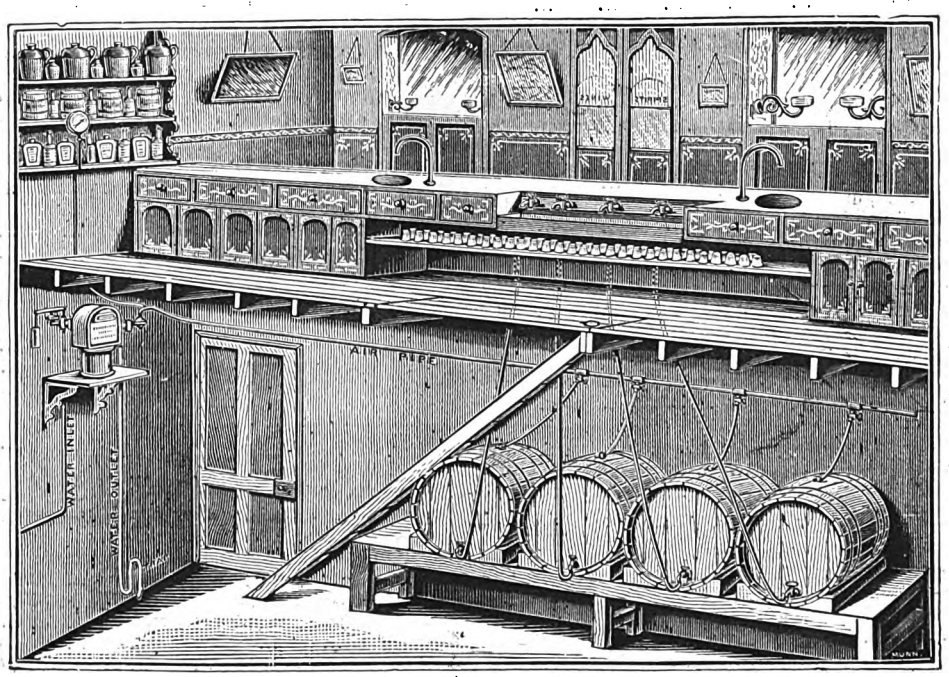
Dient dazu, Bier und andere Flüssigkeiten zu heben und mit Luftzuströmung zu versehen.

Comprimidor de aire Kennedy-Burnett, en combinacion con el contador de agua.

Aplícase como máquina de elevar y aspirar cerveza ú otros líquidos.

About 80,000 Meters already in use.

Il y a déjà environ 80,000 compteurs en usage.



Es sind bereits ungefähr 80,000 Stück Wassermesser im Gebrauch.

Ya están en uso unos 80,000 contadores.

[1]

KENNEDY'S PATENT WATER METER CO., LIMITED, KILMARNOCK, SCOTLAND,

SOLE MAKERS.

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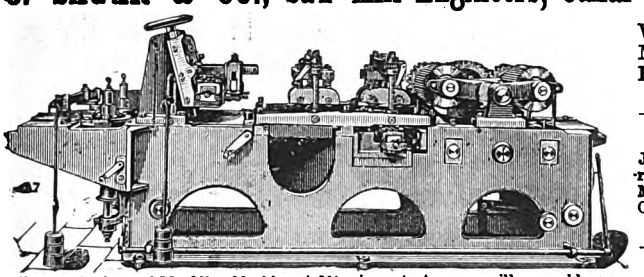
WOOD WORKING MACHINERY.

J. SAGAR & CO., Saw Mill Engineers, Canal Works (109) HALIFAX, (ENGLAND)



Patent Planing and Moulding Machine. | Máquina patente para cepillar y moldurar.

We manufacture Planing, Moulding, and Band Sawing Machines of every kind, and can offer special advantages. Parties requiring this class of Machinery are invited to communicate with us.

MAQUINARIA PARA TRABAJAR LA MADERA.

J. SAGAR & CO, Ingenieros-Constructores de Máquinas para aserraderos, Canal Works (109), HALIFAX (INGLATERRA). Construimos Máquinas para cepillar y moldurar y Cierras sin fin de todas clases Ofrecemos condiciones especiales muy ventajosas. Suplicamos á los interesados, se dirigan á nosotros para informes.

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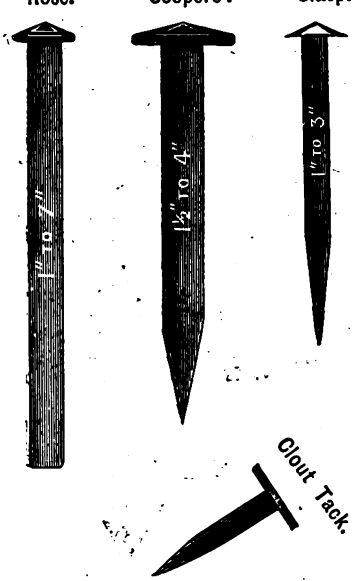
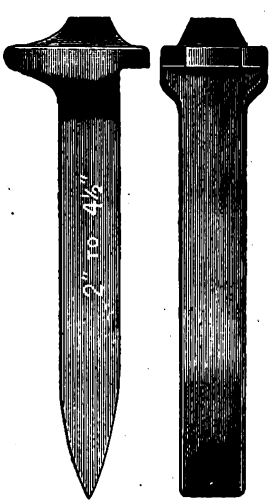
"CLYDE" BRAND. PATENT STEEL DOG SPIKE. "CLYDE" BRAND.

STEEL PRESSED.

Rose. Coopers'. Clasp.



Clout Tack.



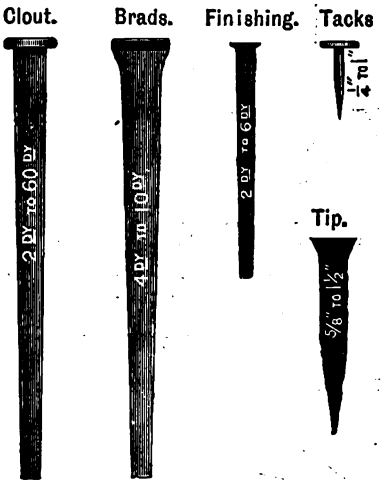
ADVANTAGES.

The projection at the back of the head affords a ready means of drawing the Spike, and being thicker at the junction of the head and shank, where the strain is greatest, they are practically unbreakable.

Made of Mild Steel.

STEEL CUT
(American Patterns).

Clout. Brads. Finishing. Tacks



Tip.

Shipping Ports—
GLASGOW, LIVERPOOL, LONDON.

CLYDE NAIL CO., NEWTON, GLASGOW,

Contractors to the British Government.

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CHISHOLM & LAW,

Fabricantes de

TUBOS DE FERRO BATIDE AO GOVERNO BRITANNICO.

ACCESSORIOS PATENTES PARA MACHINAS A VAPOR.

Estes são os mais faceis e mais perfeitos conhecidos até hoje.

Fabricantes de desvios e varas signaes, usadas nas principaes estradas de ferro no mundo.

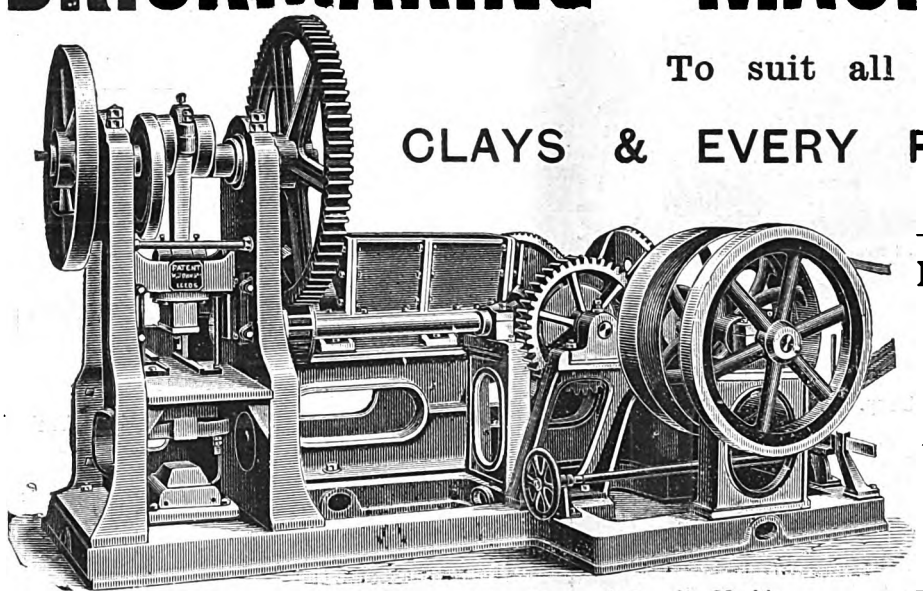
Todos os tubos são provados e garantidos.

SARACEN TUBE WORKS, WASHINGTON ST., GLASGOW.

BRICKMAKING MACHINERY

To suit all

CLAYS & EVERY PROCESS.



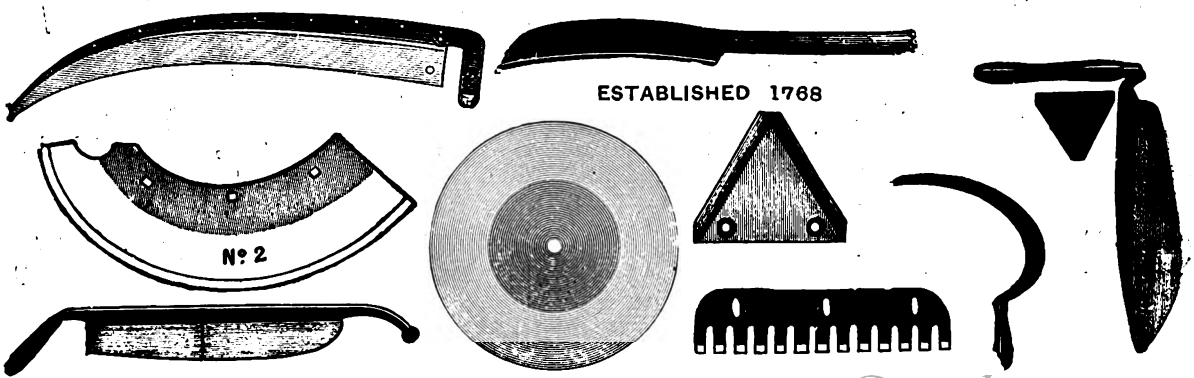
Patent Stiff Plastic Combination Brickmaking and Pressing-Machine.

PLASTIC PRESSED BRICKS Produced Automatically and taken Direct to Kiln.

EVERY CLAY-WORKING REQUISITE ALWAYS IN HAND, INCLUDING GRINDING MILLS, CRUSHING-ROLLERS, PUG-MILLS, PRESSES, MIXERS, ETC. ETC.

WILLIAM JOHNSON, Castleton Foundry, **LEEDS,** England.

LINLEY, LINACRE & BINGHAM, Cobnar Works and Clough Works, **SHEFFIELD, ENGLAND.**



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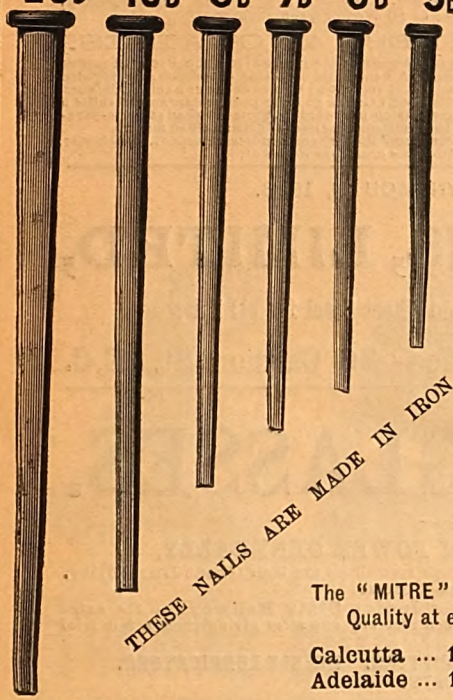
FELIX HADLEY & CO., LIM., Nail Manufacturers

MITRE NAIL WORKS, EYRE STREET, BIRMINGHAM.

CUT NAILS (American Pattern)
MITRE BRAND.

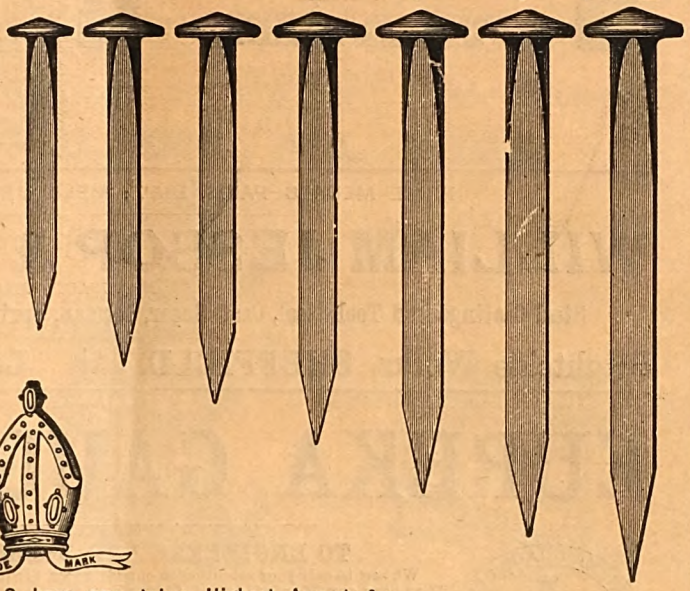
20D 10D 8D 7D 6D 5D



THESE NAILS ARE MADE IN IRON OR STEEL.

PATENT STEEL COOPERS' ROSE NAILS (Mitre Brand).

1½ 1¾ 2 2¼ 2½ 2¾ 3 to 6 in.



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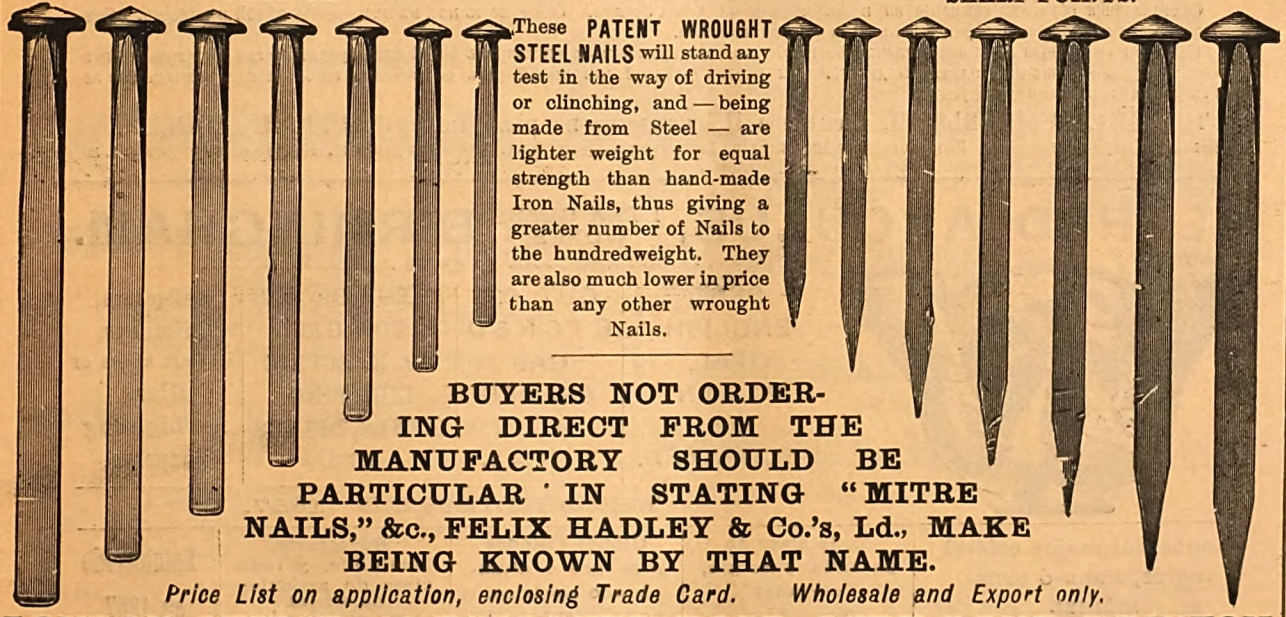

These **PATENT WROUGHT STEEL NAILS** will stand any test in the way of driving or clinching, and — being made from Steel — are lighter weight for equal strength than hand-made Iron Nails, thus giving a greater number of Nails to the hundredweight. They are also much lower in price than any other wrought Nails.

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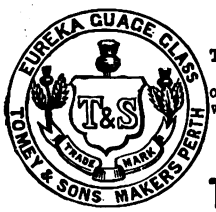

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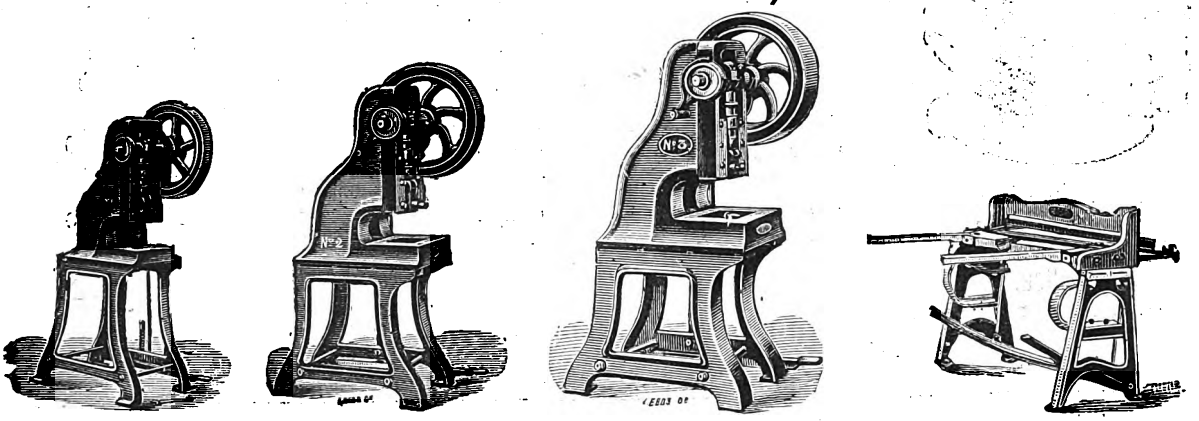

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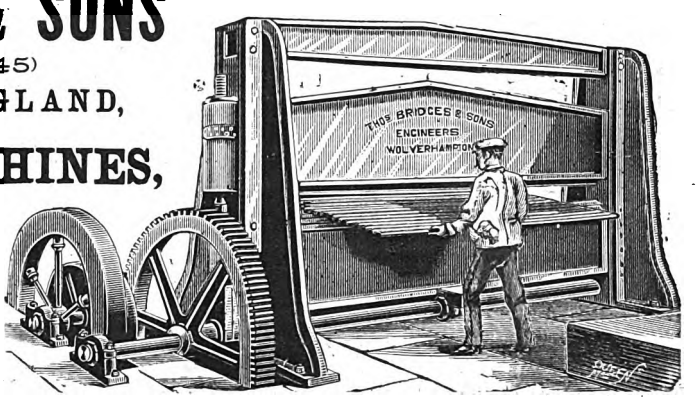

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и всѣхъ машинъ, необходимыхъ для фабрикаціи издѣлій изъ волнистаго и гальванизированнаго желѣза.

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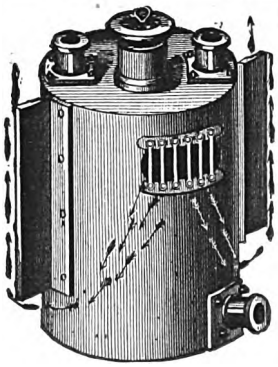
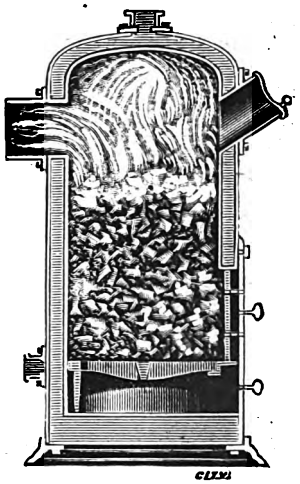
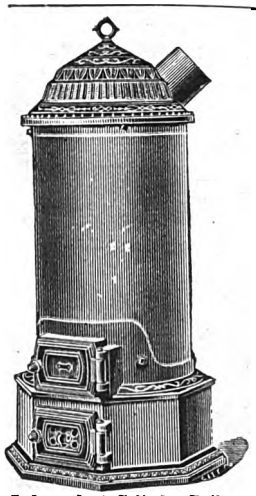


'Excelsior' Patent-Kessel Hat goldene Medaille erhalten.

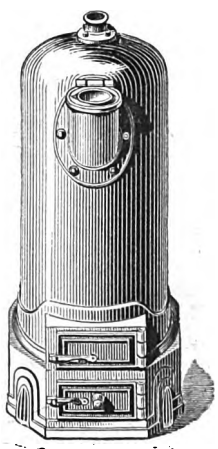
Der wirksamste und wenigst kostspielige von allen Kesseln.



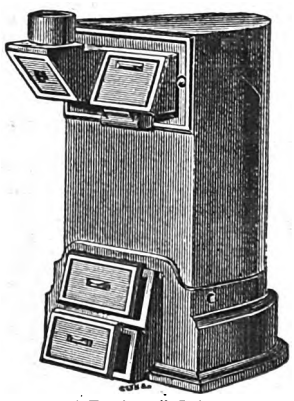
Unabhängiger Doppelcylinder-Kessel.



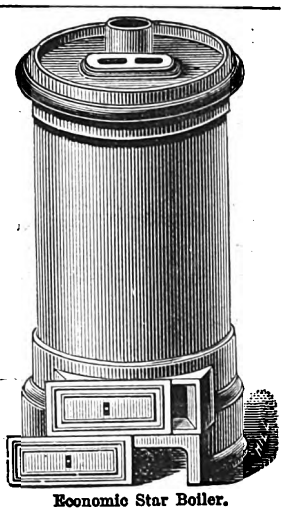
Independent Cylinder Boiler.



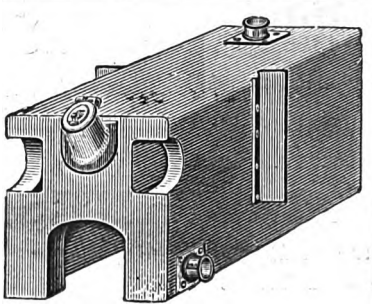
Dome-top Boiler.



"Finsbury" Boiler.



Economic Star Boiler.



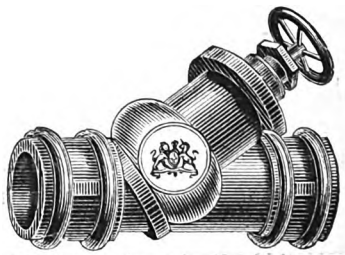
"Criterion"-Kessel.

Illustrirtes Preisverzeichnis auf Verlangen, frei.

Auf allen von uns beschickten Ausstellungen haben wir die höchsten Preise erhalten.

Wir fertigen nach allen uns gelieferten Zeichnungen Kessel an, die jedem verlangten Druck widerstehen.

Unmittelbare Lieferung von allen Kesseln.



Vertreter werden an den Orten gesucht, an denen die Firma noch nicht vertreten ist.

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See Page 2 of THE IRONMONGER for Drawings of Articles.

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Fabricantes de tornillos puntados, etc., de patente, de varillas de alambre, hierro en barras, alambre, grampas, clavos de alambre, etc. Ilustraciones en la página 2 del IRONMONGER.

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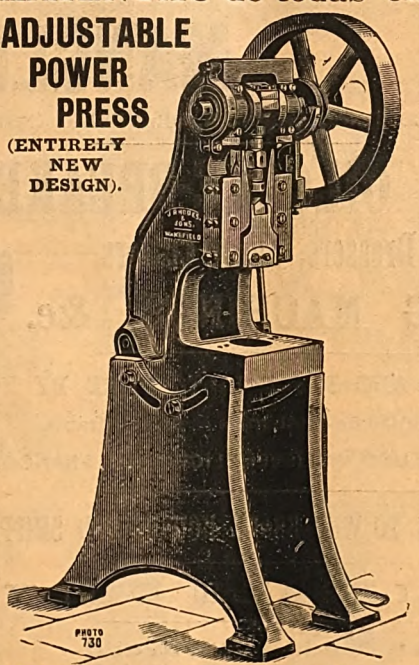

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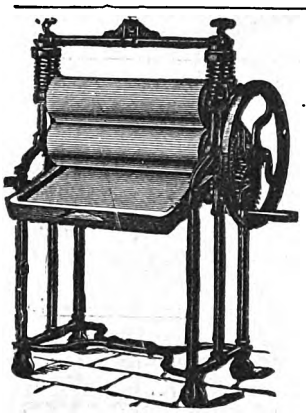

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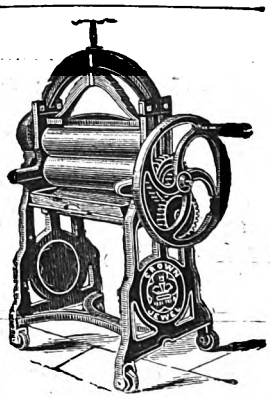

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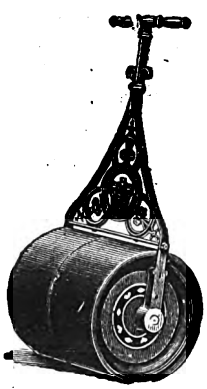

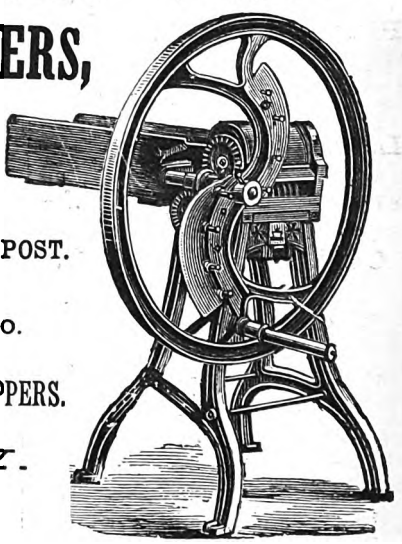

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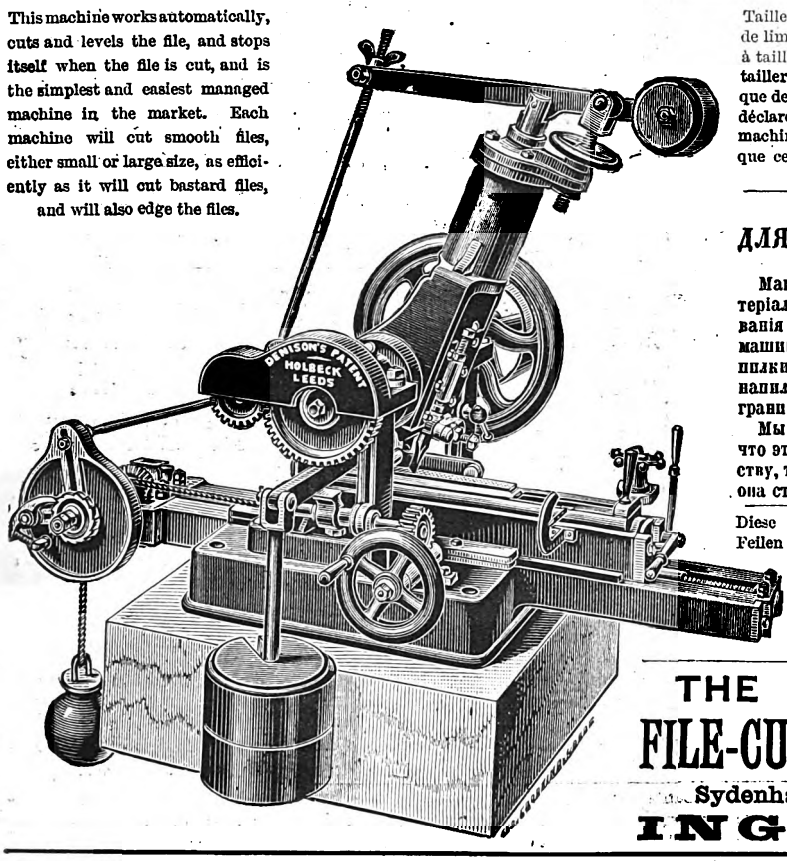

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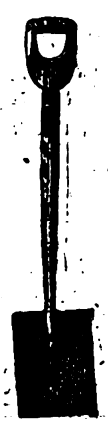

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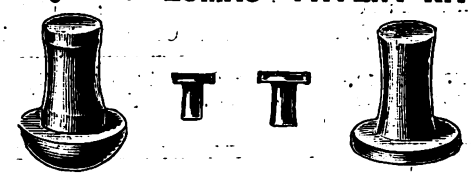

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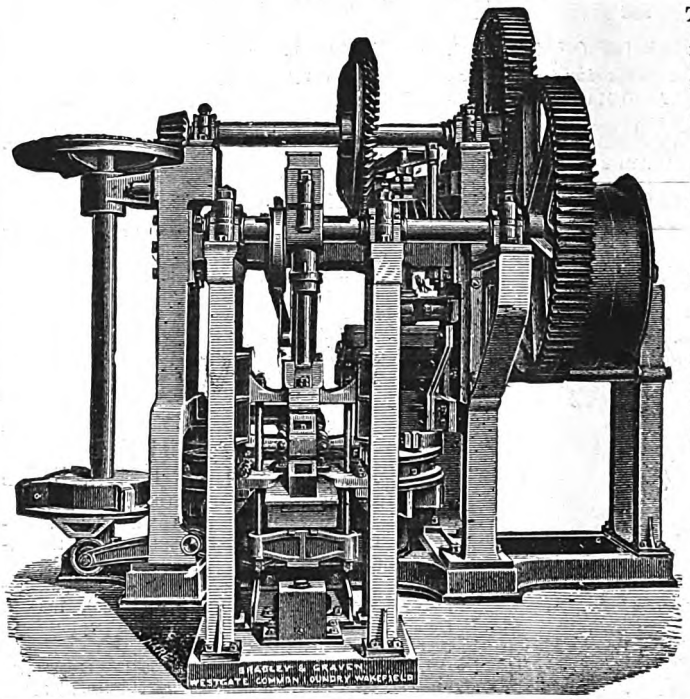

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Patente de Craven No. 1.

Esta máquina es el resultado de la experiencia conseguida en este ramo de la industria durante cuarenta años. Se compone de un aparato mezclador, una artesa, una mesa rotatoria de moldear y una prensa poderosa. Es la **única** máquina que produce **ladrillos plasticos prensados** en una sola operacion. Los ladrillos hechos por esta máquina son de gran más apretado y de mayor densidad que los hechos por cualquier otro método, pues no poseen la porosidad de los ladrillos de arcilla semiseca, y están listos á llevarse directamente desde la máquina al horno. Cabe producir **12,000 ladrillos diarios** con esta máquina.

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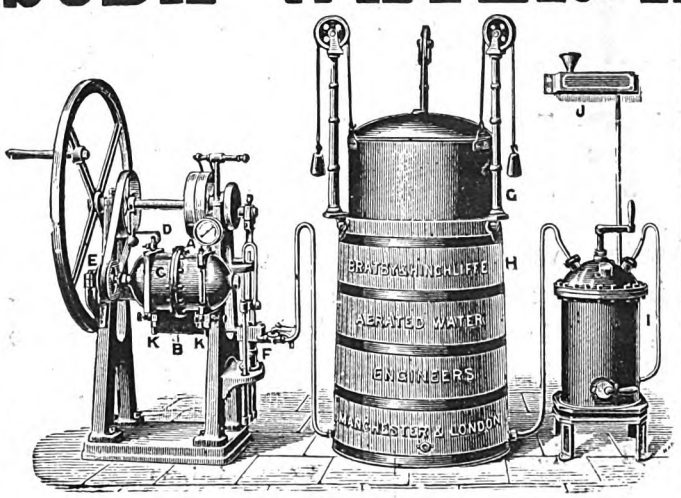

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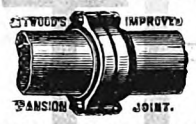

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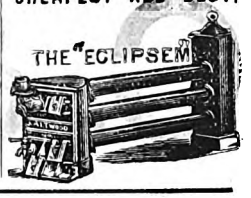

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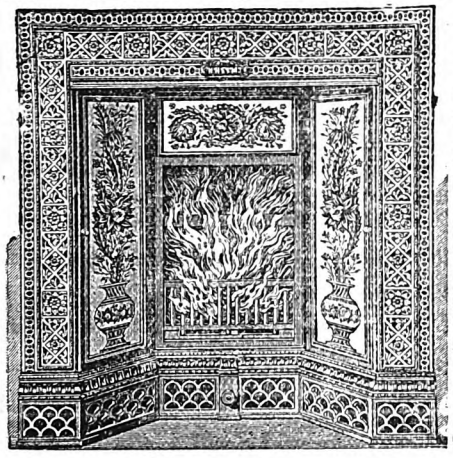

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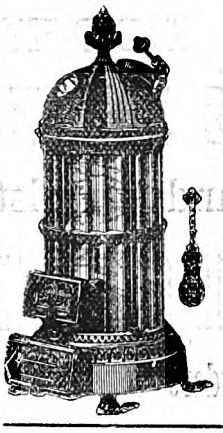

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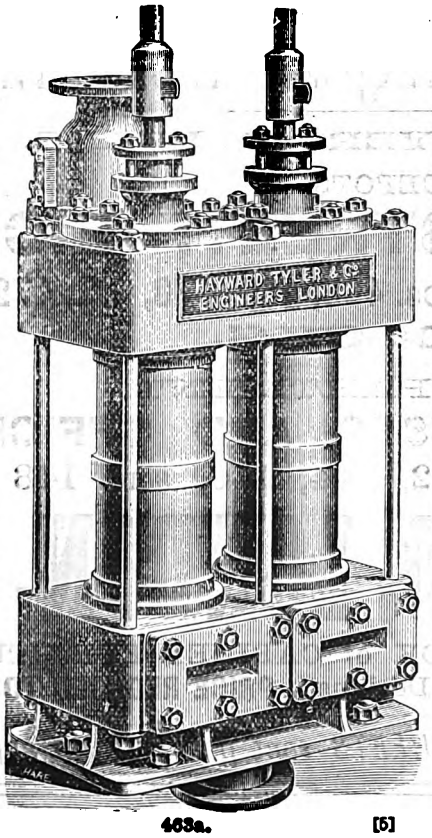

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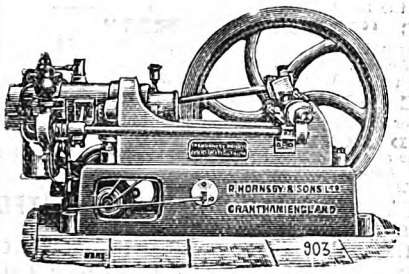

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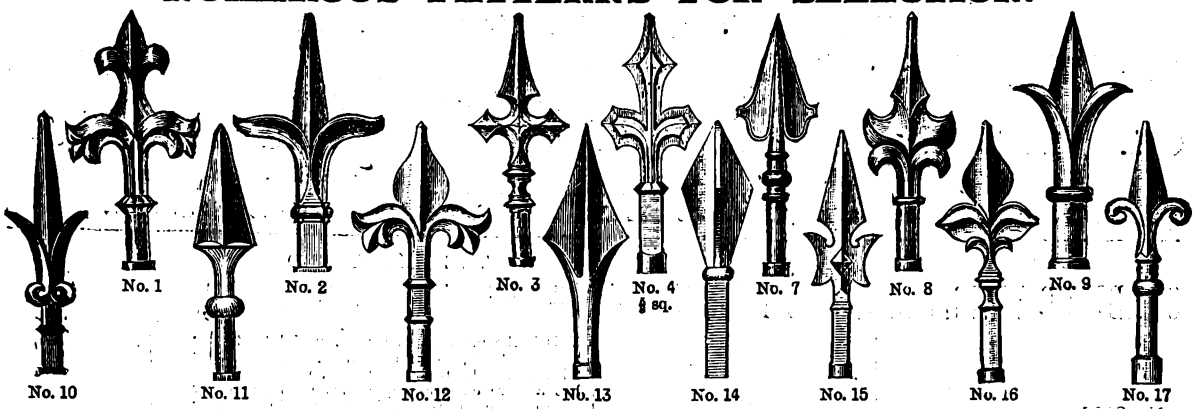

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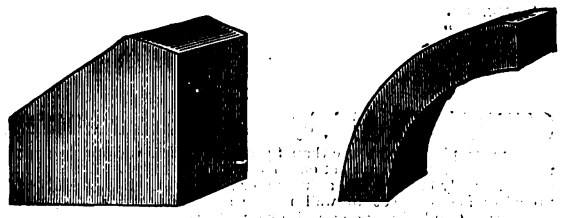

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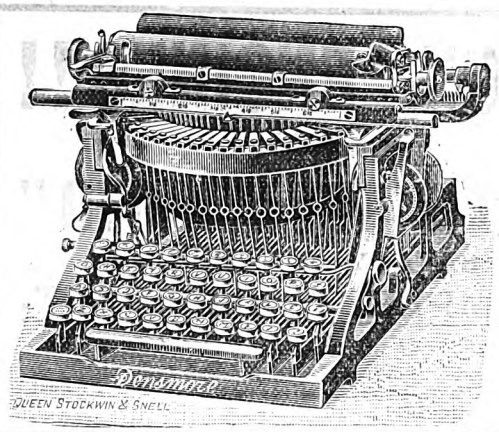

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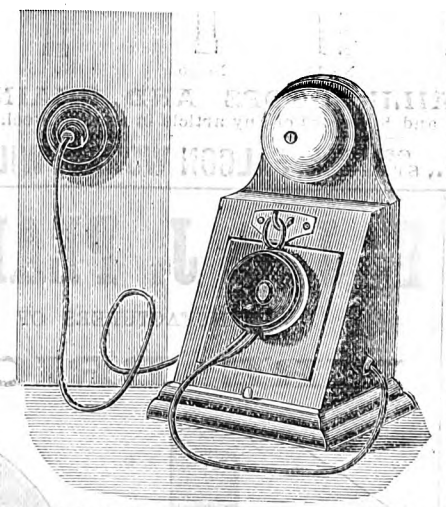

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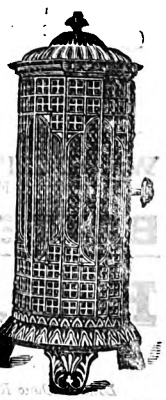

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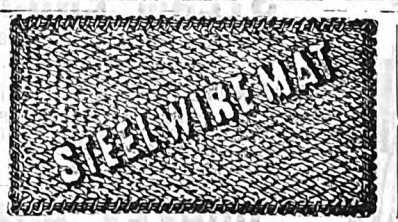

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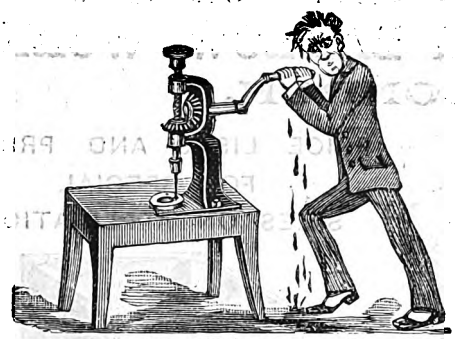

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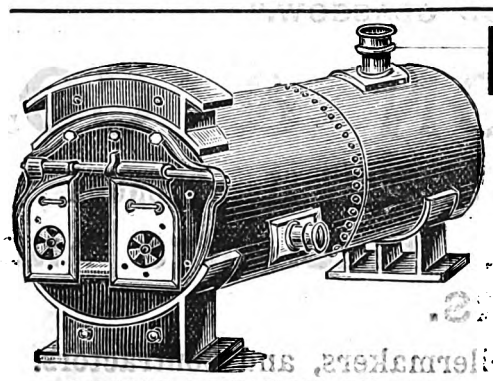

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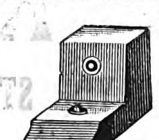
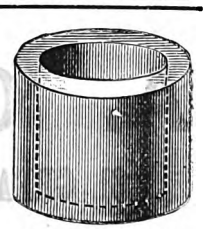


BOOT BOILER.



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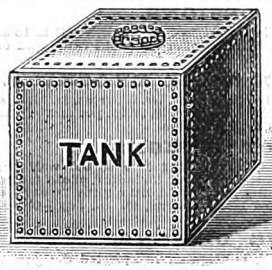

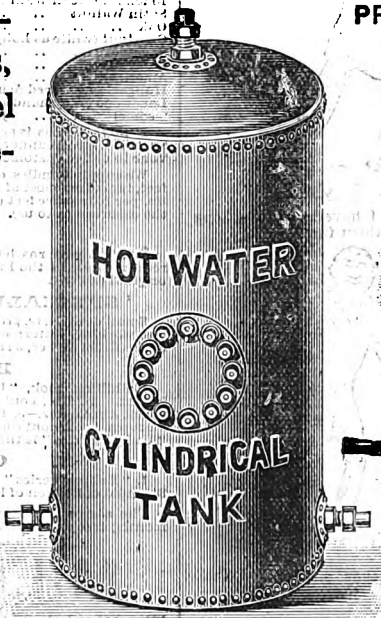

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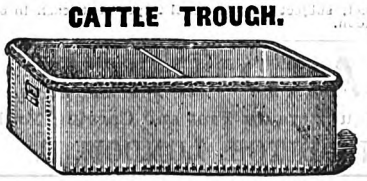

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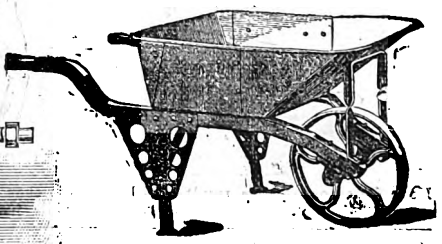

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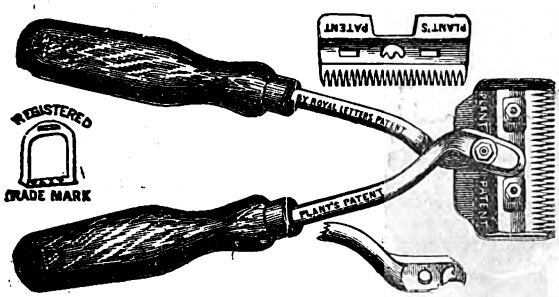

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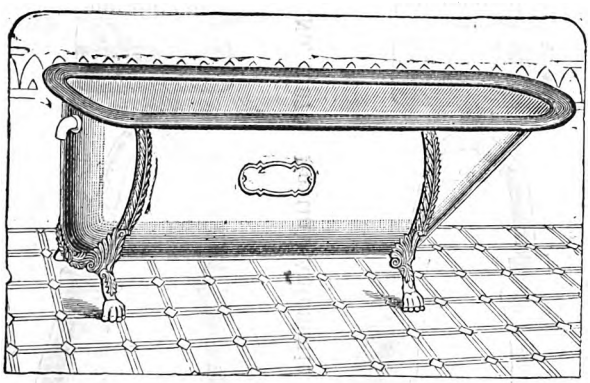

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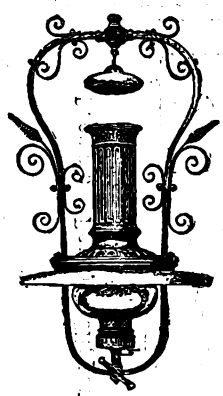

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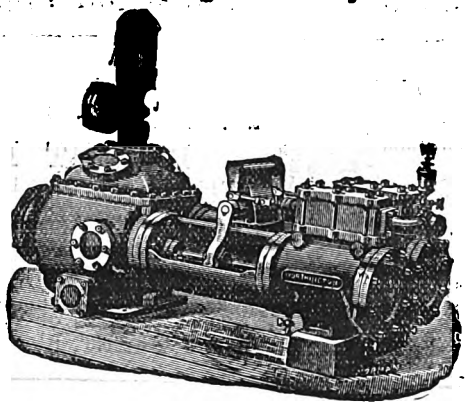

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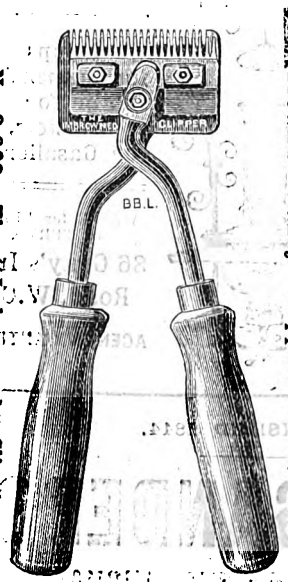

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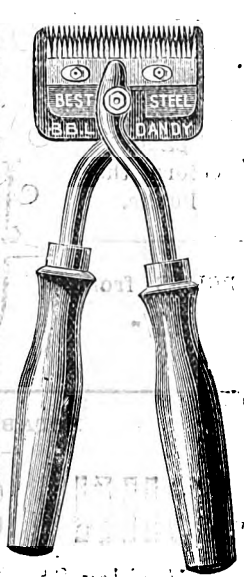

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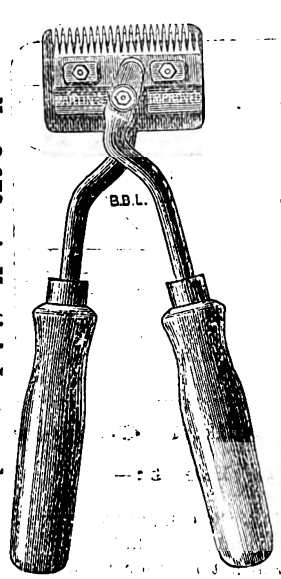

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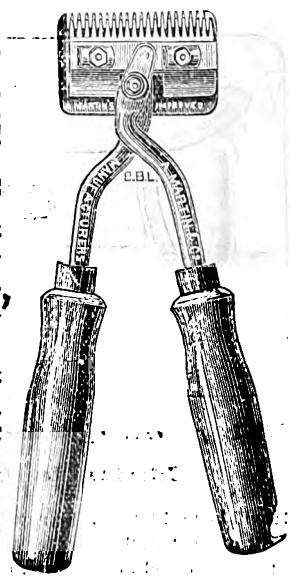

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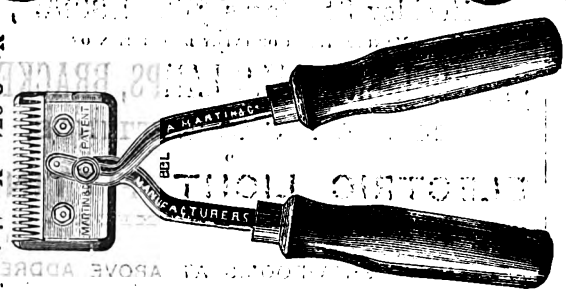

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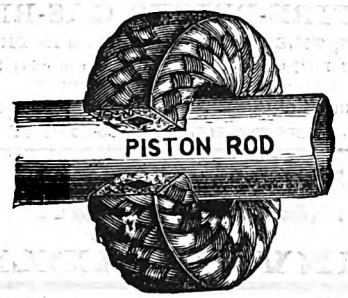

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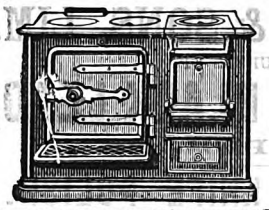

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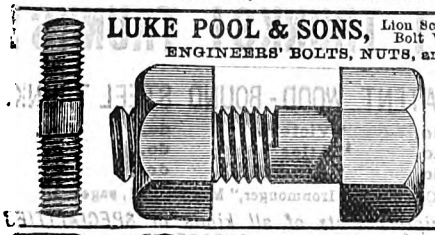

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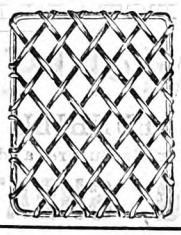

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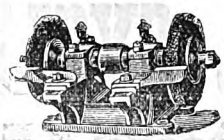

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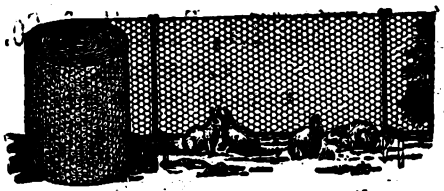

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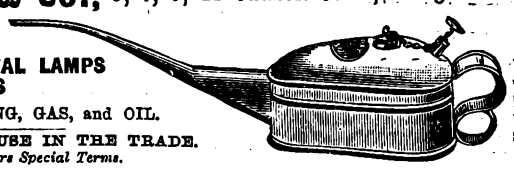

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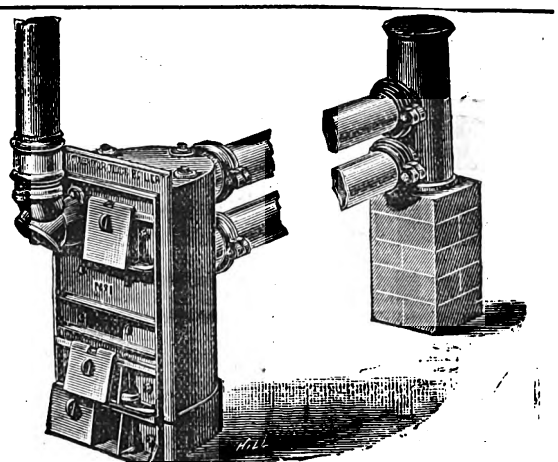

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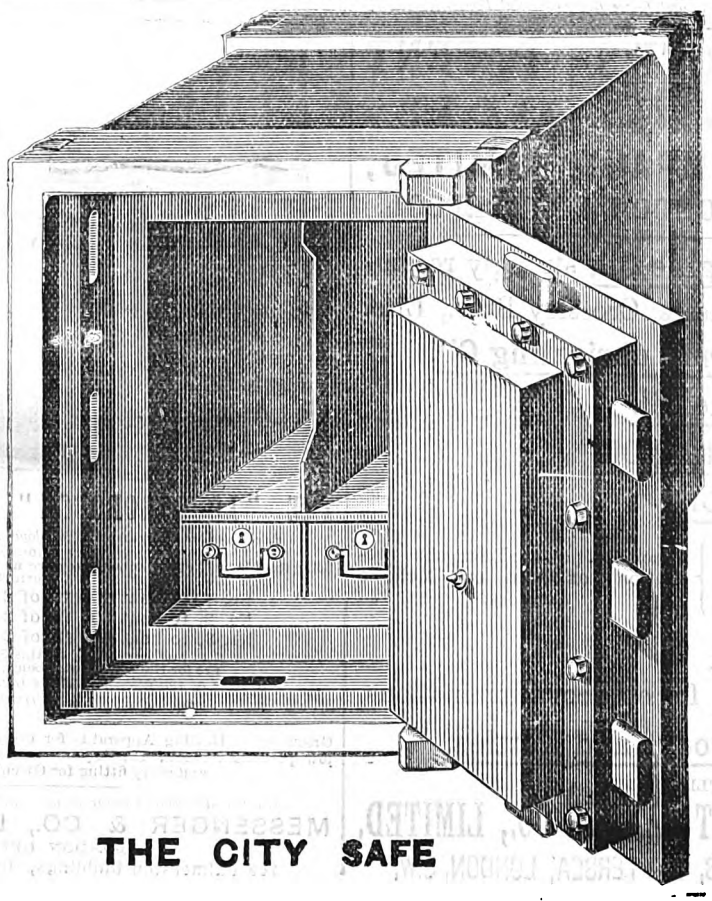

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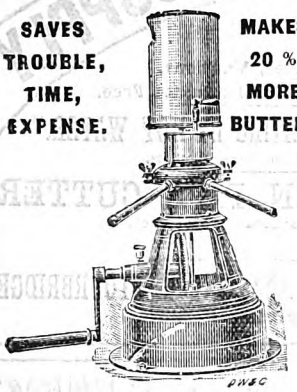

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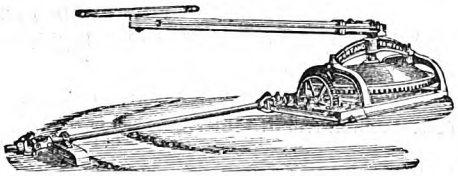

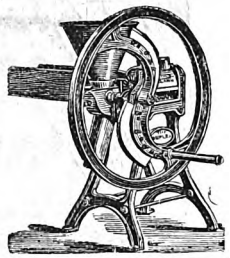

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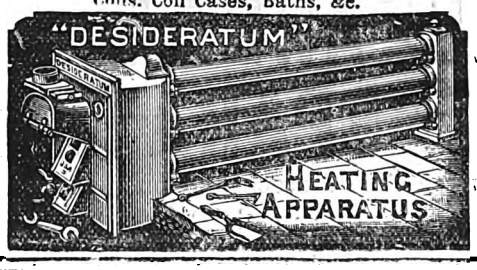

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BATHS & FITTNGS
Baths Foundry Co., Lim.
Buckingham, J.
Clark, T. & C., & Co.
Cockburn, M., & Co.
Mason, S.
Sanitary Bath Co., Lim.
Sessions, J., & Sons
Shanks & Son
Smith & Wellstood, Lim.

BATHS & LAVTRS
Benham & Froud, Lim.
Braby, F., & Co.
Cannon Hollow-ware Co.
Glasgow Porcelain Enamel Co.
Grahamston Iron Co.
Hill, F.
Maughan's Co.
Twyford, T. W.
Wollescote Galvanizing Co.

BED CHAIRS
Waddell, Douglas & Co.

BEDSTEADS
Brierley & Son
Evered & Co., Lim.
Fowles, G., & Son
Gale, G., & Sons
Hardy & Brittain
Heath, S., & Sons, Lim.
Peyton & Peyton
Waddell, Douglas & Co.
Whitfield, S. B., & Co.
Wilson Bros. & Co.
Winfields, Lim.

BEER-ENGINES
Mason, Samuel
Yates, Jas.

BELL FITTINGS
Evered & Co.
International Electric Co.
Losch & Clarke

BELLFOUNDERS
Barwell, Jas.
Baughan & Co.
Harrington, Latham & Co.

BELLOWS MNFS.
Greenslade, E. A. & W.
Linley, Linacre & Bingham
Portable Forge Co.

BELT-FASTENRS
Wallwork, R., & Co.

BELTING
Churchill, Chas., & Co.
Dick, R. & J.
Fleming, Birkby & Goodall, Lim.
Gandy Belt Manuf'g Co., Lim.
Jardine, John
Kerr & Jubb
Kimball & Morton, Lim.
Moseley, D., & Sons
Reddaway, F., & Co.
Willcox, W. H., & Co.

BIRD CAGES
Dickson, James
Ramsey, S., & Co.
Thomas, J. J., & Co.

BLIND FURNITRE
Bodill, Parker & Co., Lim.
Evered & Co., Lim.
Maxime & Co.
May & Padmore
Rollins, J. G., & Co., Lim.
Tonks, Lim.
Williams Bros. & Co.

BLOWERS
Samuelson & Co., Lim.

BOILER COMPSTN
Disinerustant Marseillais Co.

BOILER FITTNGS
Cartland & Sons
Staffordshire Steel and Ingot Iron Co., Lim.
Winn, C., & Co.

BOILER FLUES
Brown, J., & Co., Lim.

BOILER FLUID
Smallman, W. F.

BOILERS
Attwood, J.
Balmforth, T., & Co.
Braby, F., & Co.
Cradley Boiler Co.
Eclipse Copper Co.
Gapp, J. B., & Co. [Lim.
Grantham Crank & Iron Co.,
Green, T., & Son, Lim.
Hartley & Sugden, Lim.
Hindley, E. S.
Hornsby, R., & Sons, Lim.
Hydes & Wigfull
Jenkins, R., & Co.
Keith, J., C.E.
Lumby, Son & Wood, Lim.
Marshall, Sons & Co., Lim.
Mather & Kitchen
Menzies, J., & Co.
Messenger & Co.
Newton, Chambers & Co., Lim.
Pickering, Swain & Co., Lim.
Tangyes, Lim.
Wood, J. & W.

BOOT PROTECTRS
Maddock & Co.

BORING MACHNS
Hardy Patent Pick Co., Lim.
Roper, R., Son & Co.

BOTTLE BINS
Wallwork, H., & Co.

BOTTLING MCHY
Bratby & Hinchliffe, Lim.

BOLTS, NUTS, &c.
Banks & Stead
Brenton, W., & Co.
Child Bros.
Cooper, G., & Sons
Cotterill, F. W., Lim.
Gadd, Thomas [Lim.
Grantham Crank & Iron Co.,
Legge, J., & Co.
Oldbury, I.
Periam, H. W.
Schwarte & Hammer
Simpson, James, & Sons
West Bromwich Bolt & Nut Co.
Wilkes, Limited

BRASSFOUNDRY
Alexander Manufacturing Co.
Barwell, James
Bates, Jos.
Baxendale & Co.
Benham & Froud, Lim.
Benton & Stone
Birch, G. B.
Bodill, Parker & Co., Lim.
Breeden, Jos., & Co.
Carron Co.
Cartland, Jas., & Son
Cheadle & Co.
Collins, Jas.
Cooke Bros.
Cross, C., & Co.
Dixon, S., & Son
Edwards & Barnes
Evered & Co., Lim.
Gabriel & Co.
Graham, D. & C.
Heath, S., & Sons, Lim.
Hepton, Wm., & Sons
Hickin, T., & Son
Hopkins, J. H., & Sons, Lim.
Jones & Barclay
Lea, W., & Co.
Legge, J., & Co.
Losch & Clarke
Maddock & Co.
May & Padmore
Munslow, H. & W.
Osborne & Co.
Palatine Engineerg Co., Lim.
Patent Axle Box & Foundry Co., Lim.
Piercy & Co.
Pipe & Banks
Richards, R., & Co.
Scupham & Sons
Smart, Thomas
Souter, Wm., & Sons
Stevens, S. J. & G.
Timings, S., & Co.
Tonks, Lim.
Townshend & Co.
Tyler, Hayward, & Co.
Williams Bros. & Co.

BRASS TUBES
Birch, G. B.
Earle, Bourne & Co.
Evered & Co., Lim. [Lim.
Wilkes, J., Sons & Mapplebeck

BRAZIERS
Benham & Froud, Lim.

BREAD KNIVES & PLATTERS
Dover, F. W.

BRONZE CASTERS
Osborne & Co.

BRONZE POWDRS
Shanley, H.

BROOM & BRUSH MANUFRS
Dukas & Co.
Greenslade, E. A. & W.
Kent, G. B., & Sons

BRUSHES
Crowden & Garrod
Davis, Burrow & Sons
Dukas & Co.
Goodall, H. A., & Co.
Greenslade, E. A. & W.
Kent, G. B., & Sons
Rhodes, B.

CABINT FRNTRE
Benjamin, H. A.
Light, C. & R.

CANDLE SHADES
Bishop, Ellis & Co.
Entwistle & Stephens

CAP WRENCH
Cotterill, F. W., Lim.

CARPENTERS' BENCHES
Atkin & Sons

CARPT SWEEPRS
Acme Machine Co.
Benham & Froud, Lim.
Bissell Carpet Sweeper Co.
Crowden & Garrod

CARRIAGE JACKS
Portway, C., & Son
Youngs

CARRIAGE LMPS
Oerton & Grimley

CARTS & WAGONS
Smith, J., & Son

CARVING TOOLS
Marples, W., & Sons

CASH-TILL REGISTER
Gledhill, G. H., & Co.
Patent Voucher Check Till Co.
Stokes, G. R., & Co., Lim.

CASTINGS
Allen, E., & Co., Lim.
Askham Bros. & Wilson, Lim
Grahamston Iron Co.
Hope Foundry Co.
Jessop, W., & Sons, Lim.
Patent Axle Box & Foundry Co., Lim.
Shore, T., & Sons
Wallwork, R., & Co.

CASTINGS (BRASSFNDRS)
Shutt & Ganderton

CASTINGS (MALLEABLE)
Brown Bros.
Carron Co.
Dobbie, Forbes & Co.
Gameson, Thos., & Sons
Guest, J., & Son
Hardy Patent Pick Co., Lim.
Maddock, John, & Co.
Mathieson, Wilson & Co.
Osborne & Co.
Shutt & Ganderton
Tyzack, W. A., & Co.

CAST-IRON WINDOW FRAMES
Allen, W.

CHAFF-CUTTERS
Crowley, J., & Co., Lim.
Samuelson & Co., Lim.

CHAINS & CABLES
Bagshawe Bros. & Co.
Parkes, H. P., & Co.
Shaw, Henry, & Son
Vellinghausen & Stein
Younge

CHAIRS
Glenister, T.
McPhun, J. & D.

CHANDELIERS
Blaseker, H.
Falk, Stadelmann & Co., Lim.
Graham, D. & G.
Hepton & Son
Hunt, J., & Co.
Sambidge, H. W., & Son
Sanders, J.

CHARCOAL
Hirst, Brooke & Hirst

CHECK TILLS
Gledhill, G. H., & Co.
Stokes, G. R., & Co., Lim.

CHEST HANDLES
Buchanan & Wilson

CHIMNEY COWLS
Braby, F., & Co.
Croggon & Co., Lim.
Howarth, J., & Co.
King & Co.
Treggon & Co.

CHIMNEY PIECES & OVERMANTLS
Ashton & Green Iron Co.
Dobbie, Forbes & Co.
Fletcher, Russell & Co., Lim.
Sessions, J., & Sons
Steven Brothers & Co.
Yates, Haywood & Co.

CHIMNY-SWPNG MACHINERY
Ashford, W. & G.

CHURCH FRNTRE
Benham & Froud, Lim.
Tonks, Lim.

CISTERNS
Ash, J., & Son
Bawn, W. B., & Co.
Bellamy, John
Braby, F., & Co.
Burney & Co.
Croggon & Co., Lim.
Croggon & Son
Finnieston Engineering Co.
London Galvanised Iron Co.
Sessions, J., & Sons
Treggon & Co.

COACH IRONWRK
Gibson, T. | Oldbury, I.

COAL BOXES
Benham & Froud, Lim.
Ludlow Bros.
McPhun, J. & D.
Nettlefold & Sons

COAL PLATES & HSEHLD SUNDRS
Hayward Bros. & Eckstein

COAL SAVERS
Maddock, John, & Co.
Newby & Son

COCKS & VALVES
Barwell, J.
Menzies, J., & Co.

COFFEE MACHNS
Robertson & Co.

COFFIN FRNTRE
André Frères
Gordon & Munro

COLLIERY-TOOLS
Hardy Patent Pick Co., Lim.

CONTRACTORS' TOOLS
Hardy Patent Pick Co., Lim.

COPPER ROPE
Lewis, J.

COPPER TUBES
Bir'gham Battery & Metal Co.
Evered & Co., Lim.
Wilkes, J., Sons & Mapplebeck, Lim

COPPERSMITHS
Benham & Froud, Lim.
Hepton & Son
Hood, J.

COPYNG PRESSES
Alexander Manufacturing Co.

CORK
Robinson Bros.

CORK DRAWERS
Baxendale & Co.
Mason, S.

CORKSCREWS
Crowden & Garrod
Knox, H. A., & Co.

CORNICE POLES
Birch, G. B.
Earle, Bourne & Co.
McPhun, J. & D.

CORRUGATING MACHINERY
Bridges, T., & Sons

CRANES
Atterton, J.
Pickering, Swain & Co., Lim.
Youngs

CREAM SEPARTR
Lister, R. A., & Co., Lim.

CRUSHING MCHY
Askham Bros. & Wilson, Lim.

CUTLERY
Barton, F., & Co.
Blyde, E., & Co.
Blyde, John
Brumby & Middleton
Butler, Geo., & Co., Lim.
Dickinson, E. M.
Ellin, T., & Co.
Hood, J.
Needham, Veall & Tyzack
Rodgers, Joseph, & Co.
Saynor, Cooke & Bidal
Stephenson, J.
Turner, Naylor & Co.
Turner, T., & Co.
Wingfield, Rowbotham & Co.

CYCLES & SUNDRS
Barton, Arnold & Devoil
Bates, J.
Bayliss, Thomas & Co.
Brown Bros.
Churchill, H. W. R., & Co.
Cooper & Co.
Coventry Machinists' Co., Lim.
D. H. & S. Diamond Cycle Co.
Flather, W. T.
Hickin, T., & Son
Hobart Bird & Co.
Hood, J.
Leicester Cycle Co.
Lucas, J., & Son
Maddock, J., & Co.
Metropolitan Machinists' Co.,
Milan, F. [Lim.
Newman, W., & Sons
Quinton Cycle Co., Lim.
Reynolds, W. Coote
Vaughan Bros.
Whiteley & Co.

DAIRY APPLINCS
Bradford, T., & Co.
Buckingham, J.
Disc Churn Co.
Vipan & Headly
Waide, Wm., & Sons
Williams, R., & Sons

DIE SINKERS
Osborn, H., & Sons

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DIGGING FORKS
Spear & Jackson
DISINTEGRATRS
Askham Bros. & Wilson, Lim.
Carter, J. H.
Greenwood & Batley, Lim
Hardy Patent Pick Co.
DOOR FASTENERS
Cross, C., & Co.
DOOR FURNITRE
Cartland, Jas., & Son
Collins, James
Evered & Co., Lim.
Heath, S., & Sons, Lim.
Maxime & Co.
Mott, J. R., & Co.
Russell & Erwin Mfg. Co.
Scupham, W., & Sons
Slater & Co.
Verity Bros.
Williams Bros. & Co.
DOOR MATS
Maddock, John & Co.
Moseley, D., & Sons
DOOR SPRINGS
Cartland, Jas., & Son
Crompton, T.
Evered & Co., Lim.
Eclipse Rubber and Hard Wood Co.
Russell & Erwin Mfg. Co.
Verity Bros.
Wilkes, W.
Winn, C., & Co.
DRAUGHT EXCLUDERS
Purser, G. & W.
Sheath Bros.
Slater & Co.
DRIVING BANDS
Kerr & Jubb
DUST BINS
Ash, J., & Son
Braby & Co.
Burney & Co.
Davies Bros. & Co.
London Galvanised Iron Co.
Sweet Bros.
Treggon & Co., Lim.
DYNAMO BRSHES
Dickson, J.
EARTHENWARE, CHINA, &c.
Pillivuyt & Co.
EDGE TOOLS
Buck & Hickman
Churchill, C., & Co., Lim.
Edwards, W., & Son
Elliott, T., & Co.
Hearnshaw Bros.
Herring, John, & Sons
Jinkinson, A., & Sons
Linley, Linacre & Bingham
Marples, Wm., & Sons
Spencer, William, & Son
Thornton, G., & Co.
Turner, Naylor & Co.
Ward & Payne
Whitehouse, C., & Sons, Lim.
ELECTRIC LIGHT FITTINGS
Alley & Maclellan
Barnes & Green
Benham & Proud, Lim.
Best & Lloyd
Dyeman & Smith
Edison & Swan United Electric Light Co., Lim.
Evered & Co.
Gent & Co.
Greenwood & Batley, Lim.
Guthrie & Co.
Salting, Peale & Co.
Lloyd & Lloyd
Sambidge, H., & Son
Wenham Co., Lim.
ELECTRICIANS
Alley & Maclellan
Baughan & Co.
Bisseker, H.
Croggon & Co., Lim.
Dennis, W. F., & Co.
Norman & Smith
Pelten & Guilleaume
Stent & Co.
Glover, W. T., & Co.
Graham, D. & G.
Greenwood & Batley, Lim.
King, Mendham & Co.
Lloyd & Lloyd
Richter's Factories
Sarrods & Co.
Williams, Alfred, & Co.
ELECTRO AND SILVER PLATE
Daniel & Arter
Deykin & Sons
Nixon, C. E.
Turner, T., & Co.
ELECTRO-PLATG
Gilbert & Sons
Worsnop, C. H.
EMERY WHEELS AND CLOTHS
Bagshawe Bros. & Co.
Bird, C. G.
Goldsworthy, T., & Son
Greenwood & Batley, Lim.
Luke & Spencer, Lim.
Oakey, J., & Sons, Lim.
Oppenheim, S., & Co.
ENAMELLED LETTERS & SIGNS
Girtanner & Hupfeld
Patent Letter & Enamel Co.
Whale Iron Works, Lim.
ENAMELS AND LACQUERS
Crowden & Garrod
Dosker Bros.
Fordham, W. B., & Sons, Lim.
Pat. Silico Enamel Co.
Treggon & Co.
ENGINE PACKGS
Bagshawe Bros. & Co.
Dixon, S., & Sons
Wilmer, W. H., & Co.
ENGINEERS
Alley & Maclellan
Anglo-American Tool Co., The
Bridges, Thomas, & Sons
Clayton & Shuttleworth
Goodby, S., Sen.
Greenwood & Batley, Lim.
Hindley, E. S.
Keith, J., C.E.
Pickering, Swain & Co., Lim.
Marshall, Sons & Co., Lim.
Reynolds, F. W., & Co.
Summerscales, W., & Sons, Ld.
Taylor & Challen, Lim.
Toulmin, E. H.
Turner, E. R., & F.
Vaughan Bros.
Wallwork, H., & Co.
Wild, John, & Co.
Wilson Bros.
ENGINRS' LAMPS
Goodall, H. A., & Co. [Co.
Harden Star, Lewis & Sinclair
Rose's Patents Co., Lim.
Wells, A. C., & Co.
ENGINEERS' HAND TOOLS
Bagshawe Bros. & Co.
Barraclough, J., & Sons
Beveridge, Kent & Bridge
Brown Bros.
Buck & Hickman
Churchill, C., & Co., Lim.
Dantell, S. C.
D. H. & S. Diamond Cycle Co.
Gillin, A. E.
Flather, W. T.
Gibb, J., & Co.
Goodby, S., Sen.
Kitching Bros. & Co.
Kitson, J., & Sons
Knox, H. A., & Co.
Marples, W., & Sons
Midgley & Sutcliffe
Neil, C.
Plumpton, G.
Portway, C., & Son
Preston, E., & Sons
Russell & Erwin Mfg. Co.
Slack, Sellars & Co.
Taylor & Challen, Lim.
Turner, Naylor & Co
Wild, J., & Co., Lim.
Winn, C., & Co.
ENGINES
Alley & Maclellan
Barford & Perkins
Grantham Crank & Iron Co., Lim.
Green, T., & Son, Lim.
Greenwood & Batley, Lim.
Hindley, E. S.
Hornsby R., & Sons, Lim.
Marshall, Sons & Co., Lim.
Shore, T., & Sons
Turner, E. R., & F.
Wild, J., & Co., Lim.
ENGINES (GAS)
Acme Machine Co.
Crossley Bros., Lim.
Dowgill, A.
ENGINES (OIL)
Hornsby, R., & Sons, Lim.
Samuelson & Co., Lim.
FAIRY LIGHTS
Clarke's Pyramid Light Co., Lim.
FELT
Braby, F., & Co.
Cooper & Co.
Croggon & Co.
Crosson & Son
Engert & Rolfe, Lim.
McNeill, F., & Co.
Waterproofing Varnish & Wall Decorating Co., Lim.
FENCING
Braby, F., & Co.
Brooker & Co.
Felten & Guilleaume
Fletcher, G. H., & Co.
Heyward, W., & Sons
Hydes & Wigfull
Johnson, R., Clapham & Morris, Lim.
Johnson, Richard, & Nephew
Smith, Fredk., & Co.
Springfield Foundry Co.
Thomas, J. J., & Co.
Winston Foundry Co.
FENDERS
Eglin, W. P.
Fowles, G., & Son, Lim.
Greenless, B., & Co.
Hood, J.
Peel, Robert
Rowbotham, R.
Thomas, J. J., & Co.
Townshend & Co.
Waddell, Douglas & Co.
FIBRE
Moseley, D., & Sons
FILES
Allen, E., & Co., Lim.
Camm, Bagshaw & Co.
Ellin, T., & Co.
Flather, W. T.
Hardy Patent Pick Co. Lim.
Howarth, J., & Sons
Linley, Linacre & Bingham
Plumpton, G.
Slack, Sellars & Co.
Spencer, William, & Son
Taylor Brothers
Turner, Naylor & Co.
Turner, T., & Co.
Tyzack, Sons & Turner
Ward & Payne
FILTERS
Braby, F., & Co.
Hersey Bros., Lim.
Silicated Carbon Filter Co.
FIRE BRICKS, &c.
Harper & Moores
Lowood, J. G., & Co., Lim.
Mobberley, W.
Pearson, S. J. & J.
Warrington, H., & Son
FIRE EXTINGSHG APPLIANCES
Harden Star, Lewis & Sinclair Co.
Messer & Thorpe
FIRE SCREENS
Clark, J.
Hunter & Hyland
Ramsey, S., & Co.
Thomas, J. J., & Co.
FLAGS & BUNTNG
Riley, E., & Co.
FLUSHG CISTRNS
Winn, C., & Co.
FOOD WARMERS
Clarke's "Pyramid" and "Fairy" Light Co., Lim.
FORGINGS
Grantham Crank & Iron Co., Lim.
FOUNDRY REQUISITES
Hirst, Brooke & Hirst
Lowood, J. G., & Co.
FRET SAWS
Marples W., & Sons
Millard Bros.
FRETWORK
Marples, W., & Sons
McPhun, J. & D.
Millard Bros.
FROST STUDS
Linley, Linacre & Bingham
Maddock, J., & Co.
Simpson, James, & Sons
FURNITURE
Benjamin, H. L.
Light, C. & E.
GALV. GOODS
Adams, Geo., & Son.
Arkinstall Bros.
Ash, Jos., & Son
Bawn, W. B., & Co.
Bellamy, John
Braby, F., & Co.
Carron Co.
Croggon & Son
Davies Bros. & Co., Lim.
Fisher & Ludlow
Hill, Francis
Hurley, E. S.
King, Jas., & Co.
London Galvanised Iron Co.
Ludlow Bros.
Parkinson & Sweaney
Redcliffe Crown Galv. Iron Co.
Smallbone, C. W., & Son
Wollescote Galvanising Co.
GALV. IRONWRK
Braby, F., & Co.
Croggon & Co.
Davies Bros. & Co., Lim.
Haddon, Thos., & Co.
Redcliffe Crown Galv. Iron Co.
Treggon & Co.
GALV. IRONWRK & IRON ROOFS
Braby, F., & Co.
Croggon & Co.
Redcliffe Crown Galv. Iron Co
GALV. SHEETS
Adams, G., & Sons
Birmingham Corrugated Iron
Braby, F., & Co. [Co.
Davies Bros. & Co., Lim.
Gospel Oak Iron Co., Lim.
Ludlow Bros.
Redcliffe Crown Galv. Iron Co.
Treggon & Co.
GARDEN TOOLS
Benton & Stone
Hardy Patent Pick Co., Lim.
Hickin, T., & Son
Hood, J.
Ibbotson, T., & Co.
Knox, H. A., & Co.
Purser, G. & W.
Marples, W., & Sons
GARDEN FRNTRE
Barford & Perkins
Barnard, Bishop & Barnards, Benton & Stone [Lim.
Braby, F., & Co.
Butterfield, D.
Carron Co.
Cockburn, M., & Co
Dobbie, Forbes & Co.
Grahamston Iron Co.
Hardy Patent Pick Co., Lim.
Hickin & Son
Hydes & Wigfull
Knox, H. A., & Co.
Lawes, Ash & Co.
Matterson, Huxley & Watson
May & Padmore
Piercy & Co.
Redcliffe Crown Galv. Iron Co.
Smith & Paget
Steven Bros. & Co.
Summerscales, W., & Sons, Ltd.
Summerscales', W. & S., Sons
Thomas, J. J., & Co.
Treggon & Co.
Vince & Vine
Vipan & Headly
GAS-BURNERS
Bray, G., & Co.
Falk, Stadelmann & Co., Lim.
Fletcher, Russell & Co., Lim.
Howlett, N., & Co.
Hulett, D., & Co., Lim.
Peebles, D. B., & Co.
Sugg, W., & Co., Lim.
GAS COOKING APPARATUS
Carron Co.
Falk, Stadelmann & Co., Lim.
Fletcher, Russell & Co., Lim.
Hood, J.
London Fire Appliance Co.
Sugg, W., & Co., Lim.
Yates, Haywood & Co.
GAS ENGINEERS
Incandescent Gas Light Co.
Strode & Co.
GAS EXHAUSTRS
Samuelson & Co., Lim.
GAS FITTINGS
Barnes & Green
Barwell, James
Best & Lloyd
Evered & Co.
Falk, Stadelmann & Co.
Gondle & Co.
Graham, D. & Co.
Guthrie, J., & Co.
Hulett, D., & Co., Lim.
Hunt, J., & Co.
Incandescent Gas Light Co.
Menzies, J., & Co.
Osborne & Co.
Peebles, D. B., & Co.
Sambidge, H. W., & Son
Sanders, J.
Shaw, J.
Winn, C., & Co.
GATES, IRON
Allen, W.
Brookes & Co.
Hayward, W., & Sons
Smith & Wellstood, Lim.
Springfield Foundry Co.
GAUGE GLASSES
Butterworth Bros.
Kerr & Jubb
Tomey & Sons
GIRDERS
Glengarnock Iron & Steel Co
Henderson & Glass
Landore Steel Works, Lim.
Staffordshire Steel and Ingot Iron Co., Lim.
GLASS
Arculus, A.
Guest Bros.
Guthrie & Co.
Stevens, J., & Sons
Stone, Fawdry & Stone
GLASS DECORTRS
Goodlee's Pat. Metallic Glass Decorating Co.
GLASS TUBE CUTTER
Pancoast & Maule
GLAZING
Braby, F., & Co.
Grover & Co., Lim.
GOVERNRS (GAS)
Hersey Bros., Lim.
Shaw, Joseph
GREASE
Keys, W. H.
Smallman, W. F.
GRINDNG MILLS, CORN, COFFEE, &c.
Bamford & Sons
Corbett, S., & Son
Hardy Patent Pick Co., Lim.
Hunt, E., & Co.
Purshouse, B. M.
Woodgates, James
GRINDSTONES
Brown Bros.
Hickman, E.
Richmond & Chandler
GROND GANISTR
Lowood, J. G., & Co., Lim.
GRATES, RANGES, AND STOVES
Allen, W.
Ashton & Green Iron Co.
Baths Foundry Co., Lim.
Brown, Michel & Page
Carbotron Heating Co.
Carron Co.
Clark, S., & Co.
Cockburn, M., & Co.
Derwent Foundry Co.
Dobbie, Forbes & Co.
Dobbie, J.
Falk, Stadelmann & Co., Lim.
Ferrybridge Foundry Co.
Fletcher, Russel & Co., Lim.
Gheber Ironworks Co.
Grahamston Iron Co.
Heim, H.
Hersey Bros., Lim. | Hood, J.
Hope Foundry Co.
Hydes & Wigfull
Jones & Campbell
Junker & Ruh
London Fire Appliance Co.
Mathieson, Wilson & Co.
Matterson Huxley & Watson
Maughan's Co. [Lim.
Micklethwait & Co.
Newton, Chambers & Co., Lim.
Portway, C., & Sons
Rosser & Russell, Lim.
Russell, R., & Sons
Siddaway, E., & Sons
Smith & Wellstood
Springfield Foundry Co.
Steel & Garland
Steven Bros. & Co.
Summerscales, W., & Sons
Wenham Co., Lim.
Wigston Foundry Co.
Worsnop, C. H.
Wright & Butler, Lim.
Yates, Haywood & Co.
GUN-METAL MAKERS, INGOTS, AND CASTINGS
Osborne & Co.
GUNPOWDER
Curtis's & Harvey
Hall, J., & Sons
Shortridge & Wright
Smokeless Powder Co., Lim.
GUNS & RIFLES
Lane Bros.
Wild T., & Co.
Williams, F.
HAMMERS
Camm, Bagshaw & Co.
Flather, W. T.
Greenwood & Batley, Lim.
Hardy Patent Pick Co., Lim.
Roper, R., Son & Co.
Turner, Naylor & Co.
HANDLES
Hardy Patent Pick Co., Lim.
Knox, H. A., & Co.
Rollins, J. G., & Co.
HARDWARE
Barton, F., & Co
Carter, W. C., & Co.
Crowden & Garrod
Fordham & Sons, Lim.
Goodall, H. A., & Co.
Hood, J. | Hurley, Edward
Kidston, A. G., & Co.
Knox, H. A., & Co.
Maddock & Co.
Osborn, W. B. | Pipe & Banks
HAT & COAT HKS
McEvoy, H., & Co.
HAY FORKS
Linley, Linacre & Bingham
Marples, W., & Sons
Plumpton, J. C., & Co.
Spear & Jackson
HAY RACKS
Hargreaves & Dewhurst
HEARTH RUGS
Beever, J.
HEATING APPRTS
Attwood, J.
Beeston Foundry Co.
Carbotron Heating Co.
Clark, S., & Co.
Cockburn, M., & Co.
Deards, S., & Co., Lim.
Falk, Stadelmann & Co., Lim.
Hartley & Sugden, Lim
Jenkins, R., & Co.
Jones & Attwood
Keith, J., C.E.
London Fire Appliance Co.
Lumby, Son & Wood
Mather & Kitchen
Maughan's Patent Geyser Co.
Midland Lighting Co., Lim.
Allen, F.
Newton, Chambers & Co., Lim.
Pickering, Swain & Co., Lim.
Portway, C., & Sons
Rosser & Russell, Lim.
Shore, T., & Son
Steven Bros. & Co.
Sugg, W., & Co., Lim.
Thames Bank Iron Co.
Wood, J. W.
HOISTING TCKLE
Holt & Willetts [Co.
Payne-Gallway, Pickering & Pickering, Swain & Co., Lim.
Pickering Block & Hoist Co.
Pickerings (Lim.)
Priest, E.
Richards, R., & Co.
Tangyes, Lim., [illegible] Younges

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HOLLOW-WARE
Arkinstall Bros.
Ash, Jos., & Son
Austin, A. J.
Barton, F., & Co.
Braby, F., & Co.
Cannon Hollow-ware Co.
Croggon & Co., Lim.
Girtanner & Hupfeld
Gospel Oak Iron Co., Lim.
Griffiths & Browett
Hart, M. J., & Sons
Hill, Francis | Hood, J.
Hopkins, J. H., & Sons, Lim.
Hurley, E.
Moenich, O., & Co.,
Robinson, W., & Co., Lim.
Swain & Kirby
Thale Iron Works, Lim.
Topham & Snushall
Von Raesfeld, de Both & Co.

HORSE CLIPPERS
Brown Bros.
Plant, W. & J.

HORSE GEAR
Lister, R. A., & Co., Lim.

HORSE-NAILS
Haseon, R., S.
Linley, Linacre & Bingham
Maddock, John, & Co.
United Horse Shoe and Nail Co., Lim.

HORSESHOE STDS
Leonhardt & Co.
Linley, Linacre & Bingham
Simpson, James, & Sons

HORSESHOES
Edwards, W., & Son
Leonhardt & Co. [Lim.
United Horse Shoe & Nail Co.,

HORTICULTURAL APPLIANCES
Attwood, J.
Beeston Foundry Co.
Benton & Stone
Braby, F., & Co.
Jones & Attwood
Messenger & Co.
Wood, J. & W.

HOUSEHOLD SUNDRIES
Ash, J., & Son
Baughan & Co.
Beever, J.
Benham & Froud, Lim.
Braby, F., & Co.
Carpenter Bros.
Clarke's "Pyramid" and "Fairy" Light Co., Lim.
Clauss Shear Co., Lim.
Clay, A., & Co.
Cluley, John
Crowden & Garrod
Crowley & Co., Lim.
Crown Nail & Stamping Co.
Dover, F. W.
Fordham, W. B., & Sons, Lim.
Foxall, S.
Goodall, H. A., & Co.
Gourmet & Co.
Grayson, B.
Hawkins & Co.
Hill, F. | Hood, J.
Hopkins, J. H., & Sons, Lim.
Knox, H. A., & Co.
Langstaffe, Banks & Peckover
Ludlow Bros.
Matterson, Huxley & Watson
Munslow, H. & W. [Lim.
Newby & Son
Pearse, J., & Co.
Plimpton, J. C., & Co.
Procter Bros.
Pulvermann, M., & Co.
Ramsey, S., & Co.
Richter Manufacturing Co.
Richter's Factories
Robertson & Co.
Rollins, J. G., & Co.
Rushton, W.
Salsbury, J. C.
Sater, Geo., & Co.
Silent Step & Flooring Co.
Smith, H.
Sweet Bros.
Thwaites, R. C.
Tinplate Decorating Co.
Vince & Vine
Walker & Horsfoyd
Warren & Co.
Wollescote Galvanizing Co.
Woodgates, James
Wright, A. T.

HOSE & HOSE FITTINGS
Barnard, Bishop & Barnards,
Benton & Stone [Lim.
Braby, F., & Co.
Clyde Rubber Works Co.
Evered & Co., Lim.
Hydes & Wigfull
Munro, R., & Co.
Purser, G. & W.
Reddaway, F., & Co.
Sphincter Grip Co.
Treggon & Co.
Willcox, W. H.
Winn, C., & Co.

HOT-WATER APPARATUS
Attwood, J.
Braby, F., & Co.
Turner & Co.
Jones & Attwood
Keith, J., C.E.
Newton, Chambers & Co., Lim.
Purser, G. & W.
Wood, J. & W.

HURDLES
Brookes & Co.

HYDRAULIC PRESSES & PMPS
Glenfield Co., Lim.
Greenwood & Batley, Lim.
Youngs

HYDRAULC RAMS (Self-Acting)
Keith, J., C.E.

ILLUMINATION DEVICES
Edison & Swan United Electric Light Co., Lim.
Hearn, E. A., & Co.
Hulett, D., & Co., Lim.
Keeling, Teale & Co.
Palmer & Co.
Wenham Co.

INCUBATORS
Spencer, E., & Co.

INDIARUBBER GDS
Clyde Rubber Works Co.
Moseley, D., & Sons
Munro, R., & Co.

IRON BUILDINGS
Braby, F., & Co.
Keay, E. C. & J.
Lysaght, John, Lim.

IRON & STEEL MANUFRS
Glengarnock Iron & Steel Co.
Henderson & Glass
Jessop, Wm., & Sons, Lim.
Jevons, Thomas
Kidston, A. G., & Co. [Lim.
Shelton Iron, Steel & Coal Co.,
Staffordshire Steel and Ingot Iron Co., Lim.
Sutton & Ash
Tinn, Joseph
Walsall District Iron Co.
Waverley Iron & Steel Co.

IRON FENCING
Brookes & Co.
Fletcher, G. H., & Co.
Hayward, W., & Co.

IRONFOUNDERS
Allen, W.
Attwood, J.
Beeston Foundry Co.
Bridges, Thomas, & Sons
Cannon Hollow-ware Co., Lim.
Carron Co.
Dobbie, Forbes & Co.
Fowles, G., & Son
Gameson, T., & Son
Grahamston Iron Co.
Hawkins & Co.
Hayward Bros. & Eckstein
Heeley, Wood & Co., Lim.
Helliwell, J. H.
Hudswell, Clarke & Co.
Izons & Co.
James Foundry Co.
Keith, J., C.E.
Legge, J., & Co.
Maddock, John, & Co.
Mathieson, Wilson & Co.
Newby & Son
Newton, Chambers & Co., Lim.
Parkes, H. P., & Co.
Rowbotham, Richard
Sheepbridge Coal & Iron Co.,
Taylor, C. H. [Lim.
Thames Bank Iron Co.
Vaughan Bros.
Wellwork, H., & Co.

IRON MANUFRS
Bunch, B., & Sons
Lones, Vernon & Holden
Midland Iron Co.
Millington, Wm., & Co.
Rollason & Slater
Walsall District Iron Co.

IRON TOYS
Wellwork, H., & Co.

JAPANNERS
Blood, T. G.
Hopkins, J. H., & Sons, Lim.

JEWELLERY, CLOCKS, WTCHS
Greenberg, I. S., & Co.

JOINERS' TOOLS
Blyde, E., & Co.
Goodby, S., sen.
Hearnshaw Bros.
Ibbotson, T., & Co.
Kimberley, D., & Sons
Marples, W., & Sons
Turner, Naylor & Co.

JOISTS
Glengarnock Iron & Steel Co.

KEYS
Legge, J., & Co.

KNIFE CLEANRS
Acme Machine Co.
Alexander Manufacturing Co.
American Wringer Co.
Crowley & Co.
Hood, J.
Pulvermann, M., & Co.
Storey Patent Knife Cleaner
Warren & Co. [Co.
Wells, A. C., & Co.

KNITTG MACHNS
Harrison Knitter Co.

LADDERS
Summerscales, W., & Sons, Ld.

LAMP GLASS
Stevens, J., & Sons
Stone, Fawdry & Stone

LAMP GLOBES AND SHADES
Bishop, Ellis & Co.
Entwistle & Stephens
Falk, Stadelmann & Co., Lim.
Graham, D. & G.
Guest Bros.
Guthrie, J., & Co.
Stevens, J., & Sons
Stone, Fawdry & Stone

LAMPS & LNTRNS
Barton, Arnold & Devoll
Barwell, James, Sons & Co.
Benham & Froud, Lim.
Best & Lloyd
Bocock & Wilkinson
Brendel & Loewig
Buckingham, J.
Carrick, J. G., & Co.
Clarke's Pyramid Light Co., Lim.
Deflector Lamp and Miner's Appliance Co., Lim.
Deimel Light Co.
Eaton, S., & Son
Edison & Swan United Electric Light Co., Lim.
Electrical Co., Lim.
English Petroleum Lamp Co.
Evered & Co., Lim.
Falk, Stadelmann & Co., Lim.
Gardner & Munro
Graham, D. & C.
Griffiths & Browett
Guthrie, J., & Co.
Halliday, J. C.
Hersey Bros., Lim.
Hood, J.
Hulett, D., & Co.
Hunt, J., & Co.
Incandescent Gas Light Co.
Keeling, Teale & Co.
King & Co.
Messenger & Sons
Midland Lighting Co.
Moore, W. J.
Murray, R. C., & Co.
Oerton & Grimley
Palmer & Co.
Ramsay, Wm., jun., & Co.
Rollins, J. G., & Co., Lim.
Rose's Patents Co., Lim.
Salsbury, J. C.
Sambidge, H. W., & Son
Sanders, J.
Sharp, W.
Sherwood, I., & Sons
Smith, C., & Sons
Strode & Co.
Toulmin, E. H.
Townshend & Co.
Wanzer & Defries Pat. Safety Lamp Manuf't'g Co., Lim.
Wenham Co., Lim.
Worsnop, C. H.
Wright & Butler, Lim.

LANCSHRE TOOLS
Plumpton, G.

LATCHES & HINGS
Butler, J. H.
Chatwin, A.
Clark, T. & C., & Co.
Collins, Jas.
Crompton, Thos.
Evered & Co., Lim.
James Foundry Co.
Legge, J., & Co.
Russell & Erwin Mfg. Co.

LAUNDRY MCHRY AND STOVES
Acme Machine Co.
American Wringer Co.
Bradford, T., & Co.
Dobbie, Forbes & Co.
Kimball & Morton, Lim.
Moore, Murton & Varley
Smith & Paget
Summerscales, W., & Sons
Summerscales' W. & S., Sons

LAWN MOWERS
Chadborn & Coldwell Manufacturing Co.
Matterson, Huxley & Watson, Lim.
Rollins, J. G., & Co., Lim.
Samuelson & Co., Lim.
Summerscales', W. & S., Sons

LAWN-MOWER GRINDERS
Atterton, J.
Samuelson & Co., Lim.

LEAD, OIL, GLASS
Adams, H.
Grey & Marten

LEATHER GOODS
Baxter, Stoner & Co.

LIGHTNING CONDUCTORS
Benham & Froud, Lim.
Croggon & Co., Lim.
Gent & Co.
Lewis, J.
Midland Cordage Co.
Newall, R. S., & Son, Lim
Tonks, Lim.

LINEN HOSE
Moseley, D., & Sons

LOCKS
Barton, F., & Co. | Bates, J.
Cluley, John
Legge, J., & Co.
Loach & Clarke
Ratcliffe & Horner, Lim.
Russell & Erwin Mfg. Co.
Tubular Lock Syndicate, Lim.
Yale Lock Co.
Young & Co.

LOCOMOTIVES
Orenstein & Koppel

LUBRICATORS
Bailey, W. H., & Co., Lim.
Dixon, S., & Son
Willcox, W. H., & Co.

MACHINE MAKRS
Wellwork, H., & Co.

MALLEABL IRON
Hardy Patent Pick Co., Lim.

MACHINE TOOLS
Buck & Hickman
Butterfield, F. & J., & Co., Lim.
Chatwin, Thomas
Churchill, Chas., & Co., Lim.
Greenwood & Batley, Lim.
Heap, Joshua, & Co., Lim.
Lees, T. & R.
Lomas & Co.
Player, W. & J.
Scott Bros.
Wild, J., & Co., Lim.
Wilson Bros.

MANTELPIECES & OVERMANTLS
Bathe Foundry Co., Lim,
Benjamin, H. L.
Carron Co.
Cockburn, M., & Co.
Dobbie, Forbes & Co.
Fletcher, Russell & Co.
Grahamston Iron Co.
Smith & Wellstood, Lim.

MASONS' TOOLS
Nicholson, J.

MEAT CUTTERS
Alexander Manufacturing Co.
Churchill, Chas., & Co., Lim.
Gardner, J., & Son
Rollins, J. G., & Co., Lim.
Russell & Erwin Mfg. Co.
Salter, G., & Co.

MEDALS
Vaughton, P., & Sons

MCHNTS, EXPRT
Kidston, A. G., & Co.

MCHNTS, METAL
Dugard Bros.
Grey & Marten
Merton, H. R., & Co.

METAL PRPRTRS
Barns, W., & Son
Braby, F., & Co.
Harvey, G. A., & Co.
Treggon & Co., Lim.

METH. SPIRIT
Jones & Co.

MICA
Braby, F., & Co., Lim.
Entwistle & Stephens
Wiggins, F., & Sons

MILLING MCHRY
Barford & Perkins
Carter, J. H.
Howes, S.
Turner, E. R. & F.

MINING TOOLS
Hardy Patent Pick Co., Lim.

MOULDG MCHNS
Patent Sand Moulding Machine Co., Lim.
Samuelson & Co., Lim.

NAILS
Clyde Nail Co., Lim.
Cordes, J. J., & Co.
Crown Nail & Stamping Co.
Danks, Walker & Co.
Edwards & Barnes
George & Sons
Giles, John, & Son
Linley, Linacre & Bingham
Maddock & Co.
Moenich, O., & Co.
Nichols, J., & Sons
Periam, H. W.
Plimpton, J. C., & Co.
Rollason & Slater
Schwarte & Hammer
Shaw, Henry, & Sons
Vellinghausen & Stein

NICKEL PLATING
Brook, C. A., & Co.
Worsnop, C. H.

OIL CANS & TINS
Braime, T. F., & Co.
Brown Bros.
Ferguson & Hood
Hood, J.
Kaye, J., & Sons, Lim.
Murray, R. C., & Co.
Webster, Isaac

OIL FILTERS
Wells, A. C., & Co.

OIL LAMPS
Evered & Co., Lim.
Guthrie & Co.
Keeling, Teale & Co.
Sambidge, H. W., & Son

OILSTONES
Ingham & Co.

OILS
Blumann & Stern, Lim.
Brown Bros.
Cleveland Oil Co.
Fox, F. F.
Highgate, H., & Co.
Keys, W. H.
Price's Patent Candle Co.
Smallman, W. F.
Willcox, W. H., & Co.

PAILS
Carpenter Bros.

PAINTS & COLORS
Docker Bros.
Vanguard Chemical Co.

PAPER
Baldwin, J., & Son

PATENT AGENTS
Bromhead, S. S.

PAVEMT LIGHTS
Hayward Bros. & Eckstein
St. Pancras Ironworks Co., Lim

PETROLEUM
Fox, F. F.

PEWTER GOODS
Mason, S.
Yates, James

PHOSPHOR BRNZE
Osborne & Co.
Phosphor Bronze Co., Lim.

PICKS
Camm, Bagshaw & Co.
Hardy Patent Pick Co.
Roper, G., & Son & Co.

PICTURE CORD
Midland Wire Cordage Co.
Tonks, Lim.

PIG IRON
Glengarnock Iron & Steel Co.

PILE SHORS
Copley, Turner & Co., Lim.

PIPE BENDERS
Hulett, D., & Co., Lim.
Rollins, J. G., & Co., Lim.

PLANE MNFCRS
Greenslade, E. A., & W.

PLATING
Brook, C. A., & Co.
Carron Co.
Churchill, H. W. R., & Co.

PLUMBERS' PTGS
Evered & Co., Lim.
Purser, G. & W.

POLISHG MTRLS
Bird, C. G.
Cooper & Co.
Ellin, T., & Co.
Oakey, J., & Sons, Lim.
Oppenheim, S., & Co.
Palmer & Co.

POLISHG PWDRS
Cooper & Co.
Oakey, J., & Sons, Lim.

POULTRY APPLIANCES
Spencer, E., & Co.

POWER HAMMRS
Player, W. & J.
Samuelson & Co., Lim.

PULLEYS
Bagshawe Bros. & Co.
Churchill, C., & Co., Lim.
Hunt & Co.
Jardine, J.
Kerr & Jubb
Pickerings (Lim.)
Priest, R.
Tittley, H., & Son
Unbreakable Pulley & Mill Gearing Co., Lim.
Younes

PUMPS AND PUMPG PLANT
Bailey, W. H., & Co., Lim.
Evans, J., & Sons
Evered & Co., Lim.
Glenfield Co., Lim.
Hornsby, R., & Sons, Lim.
Hydes & Wigfull
Richards, R., & Co.
Stannah, J.
Tyler, Hayward, & Co.
Willcox, W. H., & Co.
Williams, Alfred, & Co.
Winn, C., & Co.
Worthington Pumping Engine Co.
Youngs

RADIATORS
Keith, J., C.E.
Newton, Chambers & Co., Lim.
Rosser & Russell, Lim.
Wood, J., & Co.

RAILINGS
Hayward, W., & Sons
Smith & Wellstood, Lim.
Springfield Foundry Co.

RAILWAY CARRIAGE PTGS
Gabriel & Co.

RLWAY WAGGNS
Orenstein & Koppel

RAIN-WATER SEPARATOR
Roberts, C. G.

RAT TRAPS
Lawes, Ash & Co.

RAZORS
Dickinson, E. M.
Ellin, T., & Co.
Needham, Veall & Tyzack
Turner, T., & Co.

READING STAND
Wellwork, H., & Co.

REFRIGERATORS
Alexander Manufacturing Co.
Barton & Co.
Benham & Froud, Lim.
Richter's Factories

RICK COVERS
Davies Bros. & Co.
Munro, R., & Co.

RIDDLES
Rhodes, B.

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RIVETS
Cooper, G., & Sons
Cotterill, F. W., Lim.
Fisher & Ludlow
Gedd, T.
Grant & Co.
Haddon, T., & Co.
Perlam, H. W.
Rollason & Slater

ROOFING SHEETS
Braby, F., & Co.

ROLLED METALS
Earle, Bourne & Co.

ROLLER SKATES
Benetfink & Co.

ROLLERS
Barnard, Bishop & Barnards, Lim.
Matterson, Huxley & Watson
Steven Bros. & Co.
Summerscales, W., & Sons
Summerscales', W. & S., Sons

RUBBER GOODS
Reliance Rubber and Hard Wood Co.

RULES & TAPES
Preston, Ed., & Sons
Rabone & Sons
Smallwood, I. & D.

RUSTLESS IRON
Butterfield, F. & J., & Co., Lim.

SAFES
Bates, J.
Hobbs, Hart & Co., Lim.
Lumby, Son & Wood, Lim.
Perry, T., Son & Co.
Price, C., & Co.
Ratcliff & Horner, Lim.
Skidmore, T., & Son
Tann, J.
Taunton, J. & J.
Whitfield, F., & Co.

SAFETY FUSES
Bennetts, W., Sons & Co.

SALT-ROLLERS
Soratts Patent, Lim.

SAND BLAST APPARATUS
Tilghman's Patent Sand Blast Co., Lim.

SANITARY APPLIANCES
Ash, J., & Son
Bostel, T. D., & Son
Cannon Hollow-ware Co., Ltd.
Clark, T. & C., & Co.
Claughton Bros.
Crapper, Thos., & Co.
Croggon & Co., Lim.
Davies Bros. & Co.
Evered & Co., Lim.
Freeman Bros.
Glasgow Porcelain Enamel Co.
Grahamston Iron Co.
Hayward Bros. & Eckstein
Hepton & Son
Mason, S.
McPhun, J. & D.
Osborne & Co.
Parkinson & Sweaney
Rushton, W.
Shanks & Son
Shaw, J.
Smallbone, C. W., & Son
Syer, Milton
Twyford, T. W.
Tyler, Hayward, & Co.
Waller, G., & Co.

SASH FASTENER
Gabriel & Co.
Shuffrey, F. B.

SASH TOOLS
Dukas & Co.

SASHWEIGHTS
Taylor, C. H.

SAUSAGE MCHNS
"Alexander" Manuf't'g Co.
Gardner, J., & Son
Green, T., & Son, Lim.

SAWS
Atkin & Sons
Barton, F., & Co.
Beardshaw & Sons
Beckett, A., & Sons
Buck & Hickman
Churchill, C., & Co., Lim.
Fisher, Geo., & Co.
Greenwood & Batley, Lim.
Ibbotson, T., & Co.
Marples, W., & Sons
Slack, Sellars & Co.
Spear & Jackson
Taylor Brothers
Turner, Naylor & Co.
Turner, T., & Co.
Tyzack, Sons & Turner

SCREWG TACKLE
Chatwin, Thos.
Goodby, S., sen.
Heap, J., & Co., Lim.
Winn, C., & Co.

SCREWS
Haddon, T., & Co.
Hawkins & Co.
Lewis, E., & Sons
Nettlefolds, Lim.
Perlam, H. W.
Russell & Erwin Manuf'g Co.
Stokes, A. & Co.

SCYTHES
Linley, Linacre & Bingham
Marples, W., & Sons

SCYTHE STONES
Linley, Linacre & Bingham

SEWG & KNITTG MACHINES
Kimball & Morton
Summerscales', W. & S., Sons

SHAFTING, PULLEYS, &c.
Brown, J., & Co., Lim.
Glengarnock Iron & Steel Co.
Hunt & Co.
Jardine, J.
Taylor & Challen, Lim.
Tittley, H., & Son
Unbreakable Pulley Co.
Younge

SHEEP SHEARS
Burgon & Ball
Burys & Co., Lim.
Linley, Linacre & Bingham
Ward & Payne

SHEETS, GALV.
Braby, F., & Co.
Jevons, T.

SHIPPG TACKLE
Bembridge & Co.
Bodill, Parker & Co.
Cradley Shipping Tackle Co.
Patent Ferrule Co.

SHIPS' FITTINGS
Carron Co.
Hayward Bros. & Eckstein

SHOW GLASSES
Stevens, J., & Sons
Stone, Fawdry & Stone

SILICA BRICKS AND CEMENT
Lowood, J. G., & Co., Lim.

SINK BASKET, "SANITARY" (Pat.)
Langstaffe, Banks & Peckover

SKATES
Benetfink & Co.
Ellin, T., & Co.
Fleming, P. & R., & Co.
Mabane, T., & Sons
Marples, W., & Sons
Turner, Naylor & Co.
Vellinghausen & Stein

SKATE STRAPS
Mabane & Sons

SMITHS' FORGES AND BELLOWS
Cruickshanks & Cook
Linley, Linacre & Bingham
Portable Forge Co.

SODA WATER MACHINERY
Bratby & Hinchliffe

SOFT SOAP
Chiswick Soap Co.
Smallman, W. F.

SOLDER
Becks, A. T., & Co.
Patent Axle Box & Foundry Co., Lim.

SPADES & SHOVLS
Bell Bros., & Co.
Hardy Patent Pick Co.
Spear & Jackson

SPEARING TUBE APPARATUS
Baxendale & Co.
Croggon & Co., Lim.

SPRING BALANCS
Salter, Geo., & Co.

STABLE FITTGS
Carron Co.
Cookburn, M., & Co.
Hayward Bros. & Eckstein
Hope Foundry Co.
Matterson, Huxley & Watson, Lim.

STAIR NOSINGS
Stevens, S. J. & G.

STAIR RODS
Birch, G. B.
Evered & Co.
Williams Bros. & Co.

STAIRCASES
Hayward Bros. & Eckstein
Keeling, Teale & Co.
Steven Bros. & Co.
St. Pancras Ironworks Co.

STAMPERS AND PIERCERS
Bisseker, H.
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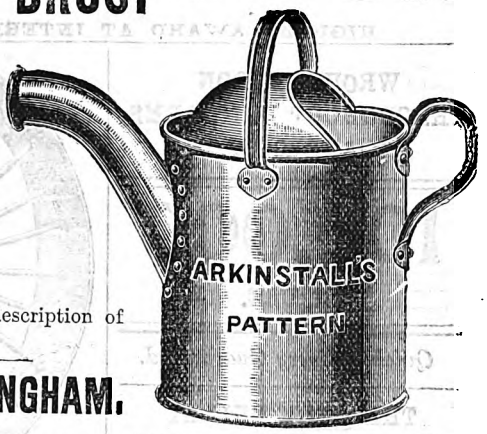

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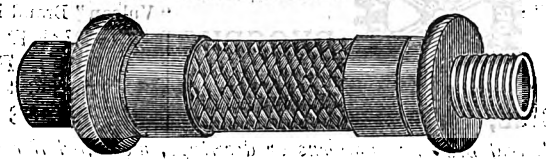

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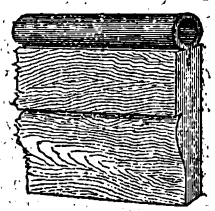

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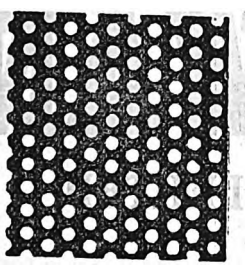

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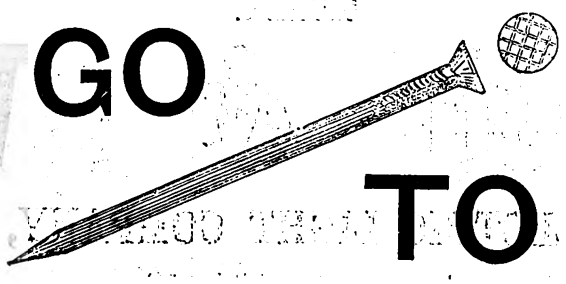

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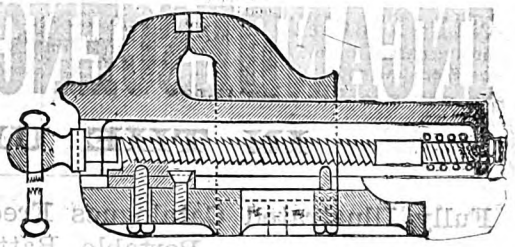

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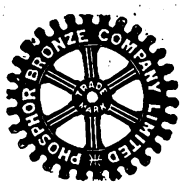

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Displayed Advertisements go to Press on Thursday, but Advertisements under any of the headings mentioned below can be received up to first post on Friday morning.

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Cheques and Post-office Orders to be made payable to **E. P. HALSE,** and crossed **MARTIN'S BANK (LIMITED).**

Our Prize Competitions.—Further prizes are announced on pages 568 and 588 of this issue, to which page reference should be made by all those desirous of entering the various competitions.

Forder & Co.'s Works, Cleveland Road, Wolverhampton, which for some time have been unoccupied, owing to the concentration of the business into one establishment, have been acquired by Mr. Andrew Potter for the manufacture of rick-sheets and other weather-proof coverings, for which purpose the premises are welladapted.

Re James Martin, 118 Birchfield Road and 10 Jennens Row, Birmingham, plane manufacturer. Debts, 196*l.*; assets, 314*l.* Public examination. Mr. H. S. Ludlow represented the bankrupt, who said that in 1880, on the death of his father, with whom he had been in partnership, he acquired the premises, and carried on the business of plane manufacturer. He estimated then that he was worth about 100*l.* over and above his liabilities. Since that time his business had declined owing to the old-fashioned trade having been killed by modern machinery and methods, and he had been obliged to mortgage the property, and also to raise money in other ways. He had, however, had no suspicion of possible insolvency until the commencement of the present proceedings. The Official Receiver said he was quite satisfied on this point, and the examination was concluded.

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The Proposed Registration of Plumbers.—The General Court of the Worshipful Company of Plumbers was held at the Guildhall, London, on September 21. The Lord Mayor, who presided, said he had recently found in various parts of the country a deep regret on all sides that the Bill for the Registration of Plumbers had not become law. Mr. Charles Hudson, chairman of the examiners, alluded to the jealousy encountered in the country at London examiners going down, but their going down was to ensure uniformity of the tests. Alderman Hind (Stockton) dwelt on the desirability of the county councils encouraging classes by prizes. Judge Digby Seymour (Newcastle-on-Tyne) said there was a feeling of surprise everywhere at the fate of the Registration Bill, and he trusted that when it was reintroduced every effort would be made locally to get members of Parliament to assist in its being passed into law. Reports relating to the examinations conducted in various parts of the country, the extension of technical education classes under the county councils, and other matters were presented. These showed that at the recent examinations 988 candidates presented themselves, of whom 558 passed the tests for general proficiency in the craft satisfactorily. Of these 293 submitted themselves to a practical test, carried through under the immediate direction of local examiners. The specimens of work were sent up to London for the approval of the City and Guilds of London Institute's chief examiner, with the result that 124 succeeded in passing; but of this latter number only 93 were approved in both theory and practice. The further examination of the 93 was subdivided into four sections, and out of the whole number 17 were admitted in recognition of their qualifications to the freedom of the company. Four of the 17 candidates came from Scotland, one from Ireland, and the remainder from different parts of England, London contributing nine of the total. Sir Philip Magnus, the renter warden, who read the reports, stated that the main object of the work of the company was to secure the education and training of competent plumbers, and expressed satisfaction that, from the reports of the examiners throughout the country, there appeared to be a marked improvement in the work of those who engaged in the trade.

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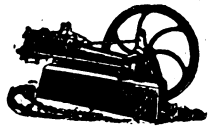
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See page ii, *last* week.
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EDITORIAL NOTES.

THE INSTITUTE MEETING.

THE autumnal meeting of the Iron and Steel Institute has taken place this week at Darlington under trade conditions which have been rendered anything but exhilarating by the widespread and wasteful strike in the coal trade. In other respects the meeting may be said to have been as successful as any of its recent predecessors, even if it has not been productive of anything sensational in respect of its literature. It has been held under the presidency of Mr. Windsor Richards, than whom no one is held in higher respect and esteem throughout the iron and steel trades, and the locality selected for the meeting is one excellently suited for the purpose. In our Extra Edition of to-day we present a full and complete illustrated report of the proceedings, which report will doubtless be attentively perused by all who are interested in the subjects dealt with by the various papers and speakers thereon. We recommend ironmongers, as well as those engaged in the iron and steel trades proper, to read the papers and discussions, seeing that it is at these meetings of the Institute that progress is noted, explained, and compared. No man can possibly know too much about the business by which he lives; consequently the really progressive man, whether he is an ironmaster or an ironmonger, must follow the proceedings of the Institute with care if he means to be thoroughly up to date and informed of all that is going on in the world of iron and steel. The Weardale Iron and Coal Company (Limited), being a great and successful concern, the description of its Tudhoe works by Mr. H. W. Hollis, the general manager, was of considerable interest, particularly to those members who intended to visit the works. The Weardale Company had the first licence granted by Sir Henry Bessemer, and the original plant is still in existence. Tudhoe, however, is rich in modern appliances, and its cogging-mill and hydraulic plant are equal to anything existing elsewhere throughout the world. As a matter of fact, that mill is the largest in the United Kingdom, and the plate-mill is also very powerful and exceptionally well fitted with special labour-saving appliances. By means of a miniature railway, on which bogies run, and live rollers, the output of the mill has been increased nearly threefold, and the cost of labour reduced to one-fifth of what it was formerly. Sir Lowthian Bell's paper on "The Waste of Heat (Past, Present, and Future), in Smelting Ores of Iron," dealt with a theme which is peculiarly the author's own, and raised sundry questions of the highest importance to all blast-furnace owners. Sir Lowthian handled the subject in a masterly manner, but it is obvious that his paper by no means exhausted it. His suggestions were that exhaust steam and the heat contained in the slag may be utilised more completely, and he detailed what has been done at the Clarence Works in that direction. The paper as a whole cannot very well be summarised within the limits of our space, but should be perused at length as it appears in our Extra Edition. Professor Bauerman's paper on "Iron and Steel at the Chicago Exhibition" was of interest, and may be read as a means of ascertaining some of the principal features of this department at the World's Fair. It amplifies some of our own reports, from another source, upon the Exhibition. The Lührig coal-washing and dry-separation plant at the Randolph Pit of the North Bitchburn Coal Company at Evenwood was described by Mr. James I'Anson, Darlington,

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in an interesting manner. This process was first introduced into Great Britain by Merry & Cuninghame at their Motherwell and Bardykes Pits, and has since been largely adopted under the influence of a separate company, of which Mr. J. C. Cuninghame is chairman. It is a very effective process in operation, the cost of labour being about $\frac{8}{10}d.$ per ton of coal handled, the ash not exceeding $2\frac{1}{2}$ per cent., and the coal in the dirt 1 per cent. The resultant products, further, are increased in their respective market values. A very interesting paper was that of Mr. J. P. Bedson on "Iron and Steel Wire and the Development of its Manufacture." This paper traced the history of wire manufacture very clearly, and showed that up to 1884 we, in this country, held the lead in the industry. In that year the basic process was invented and introduced. Since then Germany has forged ahead in many departments of wire making, but it is in the United States, Mr. Bedson holds, that this branch has been developed and perfected to a far greater extent than in any other part of the world. The output of that country is estimated at 1,000,000 tons of wire-rods annually, of which 200,000 tons is used for barb-wire and 200,000 tons for wire nails. In this country the total capacity is said to be not more than 120,000 tons. A comparison of these totals should lead our wire manufacturers to very carefully consider their position and appliances. Mr. A. L. Steavenson's paper on "The Last Twenty Years in the Cleveland Mining District" was not long, but interesting in several of its details. In particular, we would direct attention to the facts mentioned in relation to the "Support of the Roof" of mines. For this purpose steel girders have been found efficient and largely employed, the usual section being 5 inches deep by 4 inches wide, and the weight 50 lbs. per yard. An extension of this use of girders for mining purposes would be of immense service to the steel trade, and would give economical results to the colliery proprietors. The paper of Mr. William Muirhead on "Suggested Improvements in the Manufacture of Steel Plates" was of special importance, as showing the actual results achieved by himself at the new steelworks at Motherwell, of which he has the management. In his millwork Mr. Muirhead has obtained high success, owing to the high speed adopted for cogging the ingots, and in rolling the finished bars in two sets of rolls driven direct off the engine-shaft without intermediate gearing. Mr. Muirhead gave full details of the sizes and shapes of ingots used, and advocated rolling and finishing direct from the ingots in one heat. He laid stress, also, upon the importance of designing mills and plant generally for the particular class of work they are intended to perform, and appeared to think that reheating in connection with plate-rolling is unnecessary, and might be abandoned advantageously. The "Sampling of Iron Ores" was dealt with in a paper by Mr. Thomas Clarkson, who advocated and described a system of machine-work instead of hand-sampling. The author dwelt upon the advantages of improved facilities for rapid and accurate sampling as leading to exactitude in charging, and, therefore, greater regularity and economy in furnace-working. The paper by Mr. Thomas Turner on the "Production of Wrought Iron in Small Blast-furnaces in India" was of interest as demonstrating the large quantities and good qualities of the various deposits of iron ore in that empire, and the excellent results secured by crude methods of production. Analyses quoted by Mr. Turner showed splendid results in point of quality, and, if fairly representative, they show that the ores are very suitable for the production of steel of the highest quality. Mineral fuel, however, is rarely found near the ores, so that to a great extent the future of iron-smelting in India is a forest question, and small works, such as those in Styria, are likely to be more successful than attempts on a larger scale. The paper by Herr Kupelwieser on the "Manufacture of Basic Steel at Witkowitz," showed how by a combination of processes the conversion of pig into steel is being effected in the cheapest possible way when the pig contains too much phosphorus for the acid Bessemer process, and too little for the basic Bessemer process. It enables, also, the pig to be used direct from the blast-furnaces, with good results in cases where the simple single method cannot be employed. The paper was entirely practical, and the results achieved merit consideration. The paper by Professor Ledebur on the "Modifications of Carbon in Iron" followed up the investigations of Osmond, Wood, Turner, Müller, and others, and dealt with the different forms in which carbon occurs. It was, to a great extent, a "chemists' paper," but may be perused with advantage by founders and steelmakers of all classes.

STANDARD WATER-FITTINGS.

OUR valued contributor "Vulcan" raises a question to-day which is of a good deal of interest to many sections of the trade. It relates to the subject of standardising all ordinary water-fittings, so that the manufacturers may not be worried by a multitude of patterns and designs, and in order that corresponding relief may be afforded to ironmongers and plumbers. The problem is one which is doubtless of considerable importance to the manufacturers, who are much more likely to be affected by the present state of affairs than the retailer whose trade does not extend beyond the limits covered by a single set of waterworks regulations. Many ironmongers, of course, do work in several districts, and they would be much relieved were there in existence such standards as are suggested by our contributor. It is contended, it appears, on behalf of the waterworks engineers that the work of standardising water-taps, &c., could only be properly effected by means of a special Act of Parliament, but we fancy a great deal could be done in the right direction if those gentlemen would meet and agree upon a set of rules or regulations for the use of the whole number. The majority of water companies, or the Corporations owning waterworks, have special Acts; but for the most part these Acts simply authorise them to make such regulations as to fittings as they think proper, subject to the approval of the Board of Trade. They have made such rules and regulations in all parts of the country, and in so doing have had regard to their various methods of supply—gravitation or pumping—pressures, and so forth, as they believed to be requisite in order to prevent the waste of water and to ensure efficient supplies for domestic and trade purposes. Over and above the necessities of different towns, however, there are many divergencies which might very well be abolished. This is the case with the sizes and capacities of flushing and other cisterns, the sizes of ferrules for insertion in the mains, the dimensions and weights of down-pipes from closet-cisterns, the weights per yard or foot of the different sizes of lead pipes, the construction and sizes of draw-off and stop cocks, and so on throughout a long list of water-fittings. For remedying these variations and reducing them to what we may term a common denomination we scarcely think a special Act is necessary—indeed, it would be unnecessary in every case where the regulations as to fittings are not incorporated in detail in the company's special Act. There is plenty of liberty under the Waterworks Clauses Act and the other general Acts affecting public water undertakings, and it seems to us to need nothing more than a convention or congress of waterworks engineers to bring about the desired reform. Of the probability of such a meeting being brought about we are not very sanguine. Each engineer has his own views in

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relation to the sizes, weights, construction, &c., of fittings, and it might be difficult to induce some of them to modify the opinions formed as the outcome of association or the experience of many years. The late Mr. Thomas Hawksley, for instance, held very decided opinions on the subject, and it would have been a very hard matter indeed to convince him that he ought to concede anything in order to secure a common standard. It is very much the same in other quarters, hence if any alteration is to be made it will only come about as a result of strong and decided expressions of opinion on the part of the manufacturers, ironmongers, and plumbers. They are the parties who suffer, and they only can agitate successfully for reform. The general public must necessarily be voiceless in such a matter, save through the medium of the Press, and even then their unprofessional opinions would have comparatively little weight. If manufacturers and ironmongers have any strong views on the subject they should send them to us. We will publish them, and they will reach the gentlemen who are the only persons able to bring about the standards in question. A good discussion can do no harm in any case, and may be productive of much benefit to those chiefly concerned in the settlement of what is in reality a somewhat complicated problem.

THE BATTLE OF THE ELECTRIC LAMPS.

THE coming battle of the electric incandescence lamps can already be "scented," not only "from afar," but near at hand. It is likely to be a right royal fight, and will be one in which every ironmonger and the majority of the public will be deeply interested. The Edison-Swan patents will expire on November 10 next, and thereafter what has been a close, even if well-managed and enterprising, monopoly will come to an end. The two companies who have had the monopoly have done well, and will now have the opportunity of doing better. When the patent expires they will be on a purely commercial basis, and will have to hold their own strictly on their merits. It has to be confessed that they appear to fully appreciate the position, and that they are already displaying excellent generalship in bidding for the largest share of the enormously-increased demand for incandescence lamps which is morally certain to arise now that free trade in these lamps is to be established. As duly set forth in our Autumn Special Issue of September 23, the Edison & Swan United Electric-light Company (Limited) have "opened the ball" by reducing the prices of their ordinary and special lamps by 2*s.* each, thus making the tariff price-list of all such lamps 1*s.* 9*d.* each, subject to their usual terms and conditions. This alteration in prices took effect on September 21, and is certainly a bold and sagacious move on the part of the company, who will for some time to come expect, and have, to play the part of defenders against a not inconsiderable number of home and foreign assailants. The reduction in price thus announced is large, and will have effects favourable to the company, who are evidently ready for any emergencies likely to be evolved, seeing that they hold themselves free to make further alterations without notice. Their initial move, therefore, is distinctly good, strategically, and as their practical experience is infinitely greater than that of any of their actual or possible competitors the company ought to be able to hold their own so long as the lines of the contest remain even and uncomplicated by future patented improvements—particularly as they guarantee the quality of all their lamps. Before long we shall probably know more of the intentions and doings of the competing electric-lamp manufacturers. If current report is to be credited, the continental producers are making great preparations for the fray, and are alleged to have large numbers of lamps in readiness for delivery immediately the patents have expired. Rumour states that these lamps are being prepared in Belgium, Germany, Austria, and Switzerland under the impression that they can be delivered here at prices which will be lower than those of the Edison & Swan Company. It would not be fair to that company to allude more closely to these would-be rivals, but it is quite clear that when the period of monopoly comes to an end there may be some lively cutting of prices. Competition of that kind will be wholesome and good for the trade and for the public, provided—and in this case the proviso is of special importance—that the quality of the lamps is as good in one case as in the other. Experience will speedily determine that particular issue, however, and it may be taken for granted that any manufacturer who attempts to attain cheapness at the expense of quality will have no chance whatever of securing any good share of this market. There is nothing more certain than that the electric light has a great future before it, but it can grow only by demonstrating that it is superior to gas and other illuminants. Lamps of good quality are necessary concomitants of this growth, consequently all ironmongers who are pushing their business in that direction will need to be wary on the point of the quality of the lamps they sell and fix. In saying this we do not for a moment wish to hint that the coming lamps are specially liable to be deficient in construction. That is by no means a necessary sequence, for it is pretty generally understood, we believe, that the cost of production is not unduly high, and that there is a safe margin of profit even when allowance is made for the effects of strenuous competition. We have yet to wait for the situation to develop, but in any event our readers will lose nothing by carefully noting what is going on in respect of these lamps.

SPECIAL PRIZE COMPETITION (NO. 17) FOR FOREIGN AND COLONIAL READERS.

INASMUCH as the exigencies of time and distance prevent our foreign and colonial readers from taking part in our ordinary prize competitions, we have decided to give them a Special Competition all to themselves. Accordingly, we offer

TWO PRIZES, VALUE £5 AND £3

respectively, for the Best and Second Best Essays dealing with the **Packing, General Get-up, and Suitability of British Hardware Goods for Foreign and Colonial Markets.** Competitors should endeavour to offer practical suggestions for the use of British manufacturers and merchants, and if their remarks require sketches or drawings these should be as clear as possible, in case we have to re-draw them for the purpose of reproduction in THE IRONMONGER. All essays should be written in ink on one side only of small foolscap-size paper, and should not exceed about 2,000 words in length. Competitors may be importers, ironmongers, and hardware dealers, or their employés, in any part of the world *outside* the United Kingdom. The essays may be in any language, but should be preferably in English. In order to give plenty of time for readers in all parts of the world the competition will remain open until February 28, 1894. The Editor reserves the right of publishing any or all of the competing Essays. All Essays published, other than the two which win the Prizes, will be paid for at our usual rates. All competitors should endeavour to give the name and address of some person or firm in England to whom we may pay any moneys due under the foregoing conditions.

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TRADE CHAT.

From what can be gathered from Sheffield skate manufacturers, it is plain that the old-fashioned wooden patterns have still a great many admirers, and that the orders are far larger this year even than last, which was a phenomenally favourable season for this class of goods. Some new designs, however, have recently been placed on the market which are simplicity itself in the matter of attachment to the boot, and in which no strap is needed. The battle this year, as in previous years, is between straps and metal fastenings. Hitherto the former have held their own very well.

One of the latest of the "Novelties" sold by the "gutter merchants" in the streets of London for the universal penny is a pocket-knife. It is some two inches in length when closed, has imitation horn scales, a single blade, and a small ring for use in attaching the article to a watch-chain, &c. It opens and closes correctly, and is certainly cheap at the price—although I should not like to try the blade too severely. These gutter men certainly get hold of some curious things in the way of penny novelties, and the quantity they sell must make them good customers for the "Ditch" firms who supply them.

The proposed "Coal Trust" is rather a large order, look at it as you will. It involves a tremendous amount of capital (120,000,000*l.*), the surrender of all the private rights of the lessees, the co-operation of the men, and many other items which will be very difficult indeed to place under one hat. Personally, I don't believe that any such gigantic scheme can be properly organised, and even if all the colliery proprietors were willing to join I am sufficiently bold to assert that it would be contrary to the welfare of the public to allow it to go into operation. We are not yet as inured to these costly experiments at the expense of the body politic as they are in the United States.

That the valuable service THE IRONMONGER has rendered in promoting and pushing forward various important trade reforms is fully appreciated is borne out by the many suggestions made to me for enlisting the support of our journal in other much-needed reforms. It is perhaps needless to say that many of these suggestions are scarcely put forward in practicable form, but there is one question very directly affecting both ironmongers and plumbers, besides being of special importance to wholesale merchants and manufacturers, which might very well be actively discussed. It is well known that almost every water-engineer has his own special ideas as to the particular form and special manufacture of water-fittings, and to satisfy their varied requirements an almost endless variety of taps and other fittings has to be produced. The special conditions which the water authorities impose apply for the most part to matters of comparatively unimportant detail, but, nevertheless, they necessitate in every case the manufacture of a special form of fitting which not only gives endless trouble to the manufacturers but at the same time compels factors, ironmongers, and plumbers to keep in stock an unnecessarily large assortment of fittings. The suggestion made to me is that this trouble and inconvenience might be overcome if, as in the case of the well-known Whitworth standard gauges, some recognised standard for taps and water-fittings could be introduced. Some water-engineers to whom the suggestion has been put, whilst recognising the immense advantage which would be gained by having such a recognised standard, can see nothing but difficulty in the way of its attainment, and declare that it could only be secured by passing a special Act of Parliament.

Good progress, I hear, has been made at the Glengarnock Steelworks of Merry & Cuninghame (Limited) with experiments for the manufacture of basic steel in the open-hearth furnace.

One of the prettiest American fashions is that of giving "souvenir spoons." These little articles of "bigotry and virtue" are made in any manner of devices, and many American girls possess quite a charming collection of them. A Tennyson souvenir has the verse from "In Memoriam," "Ring out the false, ring in the true," engraved upon the bowl, while the handle is composed of tiny gold bells. Another, from Venice, has the lion of St. Mark upon the handle. Some have little views in the bowl; almost all are quaint and fanciful.

A vigorous effort is at length to be made to establish works for the manufacture of iron and steel at Wallerawang in New South Wales. Mr. Albert Leahy, who has acquired important concessions and mineral rights for the purpose, is now in Glasgow making arrangements for establishing a company to bring the enterprise to completion. Coal, iron-ore, and limestone are all to be found in the property to be acquired by the company, and Mr. Leahy seems confident that it will be able to do well, and to claim the premiums offered by the government of the colony for the establishment of successful works of this description.

In the matter of electric lighting, Sheffield, I am glad to see, will soon be abreast of any provincial city in the kingdom. The company which has for some years past lighted certain parts of the town will soon be in a position to switch on current enough for 150,000 glow-lamps, so that however murky the atmosphere may be by day (and the central parts of Steelopolis rarely rival the Riviera during the hours of daylight), Sheffield by night will no longer be a byword and a reproach. Underground wires are to take the place of the present objectionable overhead conductors, and duplicate engines and boilers will be installed so as to provide against mishap.

Hengrave Hall, near Bury St. Edmund's, which has just been sold for over 90,000*l.* to Mr. John Lysaght, of Bristol, at one time belonged to Penelope, a daughter of Earl Rivers. Of this fair aristocrat an amusing story is told. She had three suitors at the same time—Sir George Trenchard, Sir John Gage, and Sir William Hervey—and to keep peace between the rivals she threatened the first aggressor with her perpetual displeasure, telling them that if they would wait she would have them all in turn—a promise which she actually performed. The gentleman first favoured was Sir George Trenchard. He died shortly afterwards, and she was not long before she became Lady Gage. Sir John, by whom she had nine children, died in the year 1633, and two years later his widow was led to the altar by Sir William Hervey. The lady survived all her husbands.

The discussion which took place in the House of Commons relative to the respective merits of English and foreign shells, and as to the purchase of some of the latter by our own Government, has excited a good deal of feeling at Sheffield. In that city several firms have laid down extensive and expensive plant for the manufacture of these projectiles, and it seems to be held that the Government has not treated them with due consideration. Mr. R. A. Hadfield, for instance, contends that our trial shooting-grounds are not nearly so well equipped as those of France, Germany, or the United States—besides which it is alleged that undue advantages are given to Woolwich. Above all, it is urged that Sheffield can supply shells of any required quality, whether for armour-piercing, shrapnel, or common.

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It's an ill wind that blows no one any good. The tinplate-works erected at Piombino, Italy, are now in operation. The product is used mainly for making sardine-boxes and other packages for preserving fish. This plant was started as a result of the discussions in British and American journals growing out of the M'Kinley Act and the establishment of tinned-plate manufacture in the United States. Largely from the same cause tinned-plate manufacture has been commenced in Russia, and an impetus has been given to its manufacture in France.

In connection with the presentation of cutlery and plate from the city of Sheffield to the Duke of York a slight hitch has occurred. The sub-committee appointed to make the arrangements connected with the gift allowed one of the firms to whom the task of making the goods was entrusted to enclose their articles within a casket of their own manufacture. Exception was taken to the casket on the ground of its alleged inartistic nature, and ultimately all the firms, with the exception of the makers of the casket, made a combined protest against its being presented to the Duke of York as the gift of Sheffield. The Royal Wedding-present Committee, however, have decided that, under the circumstances, it would be impossible to adopt the suggestion of the protest.

The condition of the unemployed chainmakers in the Black Country during the present unfortunate strike is truly lamentable. Hundreds of them are patrolling the district as vagrants, disposing of a sheet of verses entitled "The Chainmakers' Lament." Whatever sympathy the poverty of the pleaders might excite would not, I think, be much accentuated by the poet employed for the occasion. I only venture to quote in support of this opinion a single verse from the Chainmakers' Laureate:—

> Kind friends, condemn not these our lines,
> Caused by the hardness of the times:
> Remember the Scriptures' wise decree—
> With you the poor must always be.

It was with unfeigned regret that I heard of the death of Mr. Benjamin Whitworth, and many, both inside and outside the metallurgical industries, must have felt the same. My personal acquaintance with Mr. Whitworth only dates back a few years, but as a platform-speaker his face and voice have been familiar to me for more years than I care to count. He was one of the truest-hearted men I have ever had the privilege to come in contact with, and it may be unhesitatingly asserted that he spent his life in trying to benefit others. Unlike the generality of public men, who are difficult of approach, Mr. Whitworth was ever ready to afford such information on trade topics as it was in his power to impart, and I may be pardoned, perhaps, for expressing in this place my gratitude for the kindly way in which on numerous occasions he assisted me journalistically.

Prize lotteries are not confined, it seems, to foreign governments and enterprising English newspapers. In Australia, also, the institution appears to have struck root pretty freely and attained developments unknown in the Mother Country, perhaps because they are illegal here. A commercial traveller, newly returned from Melbourne, states that a well-known business house there is so disgusted with the commercial situation and outlook that it has announced its business for sale as a going concern in the only way that seems feasible in the actual state of the money market—viz., by public lottery. The value of the concern is fixed at 50,000*l.*, and the tickets are 1*l.* apiece. It is not stated what capital would be required by the winner to enable him to carry on the business. But that, as the French would say, is a detail.

A Sheffield manufacturer, who has just returned from a lengthy journey on the Continent, tells me that the Germans are marking their worst goods in English, and flooding neutral markets with them. He showed me a cardboard box, on the lid of which was a gilt representation of the Royal Arms of England, with the motto *Honi soit qui mal y pense*. This box contained cast-metal German scissors, which were presumably passed off as articles of British manufacture.

In contrast to the above is the curious statement made by a Remscheid saw-manufacturing firm that, to their certain knowledge, some parcels of steel exported from this country to Germany as genuine English manufacture were found on examination to bear the legend "Made in Germany." The allegation has naturally given rise to much sarcastic comment in Teuton trade papers, and a suggestion is half seriously put forward that in future, in order to put a stop to this sort of thing, the German Government will have to insist on all goods of English manufacture being stamped "Made in Great Britain." How would that suit the steel makers of Sheffield?

The sweet uses of adversity are happily exemplified just now in the strong union which has succeeded to the recent reckless competition in the Birmingham bedstead trade. Out of fifty firms no fewer than forty-one have already joined the Manufacturers' Association, and several others have given a qualified adhesion to the movement. But the strength of the union consists not so much in the price-list agreement among the masters as in the alliance which has been practically established between them and the Operatives' Union. The terms of the alliance provide for the appointment of a wages board to settle day and piecework prices and the hours and conditions of labour, and the two unions agree on the one side that only association men shall be employed, and on the other that they shall work only for association masters. A sliding-scale is to be arranged which will give the men a bonus of 15 per cent. upon the standard rate of wages, and a share of any advance in actual selling prices The combination is settled in principle, but some details have yet to be arranged. The inevitable effect of the arrangement will be to stiffen the prices of metallic bedsteads all round.

Experiments have been made at the South London Rifle Butts, Nunhead, with yet another "smokeless explosive," the invention of a French priest, M. l'Abbé Schnebelin, and called after him "Schnebelite gunpowder." The basis of this powder is chlorate of potash, a substance which has hitherto been used only for the manufacture of detonating compounds, on account of the facility with which it can be detonated by percussion or friction when mixed with some inflammable material such as sulphur or black sulphide of antimony. In fact, the mixture of chlorate of potash and sulphur was used in the earlier patterns of percussion caps for muskets, and the mixture with black oxide of antimony is still employed in the ordinary friction-tubes with which the charge in muzzle-loading guns is usually fired. In "Schnebelite" the chlorate of potash is mixed with pure cellulose, or woody fibre, such as is used for the manufacture of guncotton or Schultze powder. The advantages claimed for it by the inventor are numerous, the principal being as follows:—Facility and cheapness of manufacture; almost smokeless; very slight recoil; no fouling or oxidation of the rifle; unless confined will only burn gradually, and not explode; imperishable, retaining its properties even after being wet, and involving no danger when heated; non-explosive by concussion or friction, and requiring 540° Fahr. to ignite it.

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Mr. Henry Stedall (Pfeil, Stedall & Son), Broad Street, Bloomsbury, has been appointed by the committee treasurer to the Royal Iron, Hardware, and Metal Trades Pension Society, in the room of the late Mr. Robert Henry Pearson.

The late Mr. Thomas Hawksley was in many respects a remarkable man. He was pre-eminent as a waterworks engineer, and had carried out more undertakings of that class than any other engineer of the century. He was very emphatic in his opinions, and singularly clear and accurate in the evidence he was so often called upon to give before Parliamentary committees, as well as before local justices of the peace when his clients were seeking to impose new regulations as to fittings. Mr. Hawksley was a well-known member of the Iron and Steel Institute, and, it is very satisfactory to note, retained his mental powers almost to the last.

Civilisation in connection with the advance of British trade in savage lands was wont to mean rum, beads, and flint guns. Now, apparently, it means trousers. A Birmingham mercantile firm which has lately been pushing trade in the goldfields of South Africa, lately received, among other orders for tools, guns, and tinware, one for some 10,000 pairs of second-hand trousers! On inquiry, it turned out that the garments were wanted for the use of the Kaffirs employed in the mines, who are required to make this sacrifice to the white man's prejudices when they enter his service. As no trouser-stretchers or braces were mentioned in the order, it is assumed that the Kaffirs are not fastidious about the fit of their only garment.

"Little people," especially in America, have taken out a number of profitable patents. The youngest inventor on record is Donald Murray Murphy, of St. John, Canada, who at six years of age obtained from the United States the exclusive right in a sounding toy. Mabel Howard, of Washington, at eleven years, invented an ingenious game for her invalid brother, and got a patent for it. Arthur G. Smith, of Illinois, at twelve years, patented a rowing-apparatus. When only seventeen years old, Benjamin F. Hamilton, of Boston, took out patents on a number of devices for electric and elevated railways. Samner Kerr, a youth of eighteen, has patented a self-feeding pen. Other boys of about the same age have invented useful devices for electric signalling, telephoning, and cigarette-making. One has patented a machine which, it is said, turns out sixty horseshoes a minute.

I had not the privilege of being present at the Artillery Drill-hall, Sheffield, last Saturday evening, but from the report of the proceedings published in the local papers a most enjoyable time seems to have been spent by the employés of Walker & Hall, who had met together for the purpose of presenting a tea and coffee service, a cabinet of cutlery, and an illuminated address to the junior partner, Captain A. E. Bingham, on the occasion of his marriage It may seem a little like sending coals to Newcastle to offer a manufacturer of silver-plate specimens of the silversmith's art; but the feeling amongst the workpeople seems to have been that the fittest way to give expression to their esteem and admiration for Mr. Albert Bingham was to prepare for him a superb example of their skill, and this accordingly was done, and with the happiest result. In the course of the speechmaking which followed the presentation, Colonel Bingham, the senior partner, expressed his satisfaction that the firm had not been turned into a limited-liability company. Such a concern as Walker & Hall's, which depends for success so largely upon the individual energy and skill of one or two men, must, I think, prosper more as a private undertaking than as a public venture.

VULCAN.

THE WEEK.

Sheffield Projectiles in the United States.—At a recent test made at Sandy Hook, one of the shells sent for trial by Hadfield's Steel-foundry Company (Limited), Sheffield, was extremely successful. The projectile, which weighed nearly half a ton, was fired at the low velocity of about 800 feet through a mild-steel Carnegie plate, 4½ inches thick, without breaking. The shell was fired from a 12-inch mortar at an angle of 60°. The plate was completely shattered, leaving the pine backing exposed in many places.

Presentation. — Mr. James Laing, the well-known shipbuilder, was the recipient on Saturday last of a large-size portrait of himself, painted by the Hon. John Collier. The portrait was accompanied by an illuminated address from the workpeople, the occasion being the centenary of the establishment of the works, Mr. Laing's seventieth birthday, and the jubilee of his taking over the business from his father. About 2,000 workmen and their wives were entertained to tea in the Victoria Hall, at the conclusion of which the presentation was made. Mrs. Laing was also presented with her portrait, painted by the same artist.

Abridgments of Patent Specifications.—The Comptroller of Patents, Designs, and Trade-marks notifies that a new series of illustrated abridgment classes will shortly be ready for publication at the Patent Office. From the specimen copy of patents in class 126, covering stoves, ranges, and fireplaces for the period 1877–83, now before us, consisting of 150 royal octavo pages, with nearly 700 illustrations, we are of opinion that great advantage will accrue to inventors and manufacturers, inasmuch as the publication of such abridgments must necessarily greatly reduce the labour of searching through the voluminous files of living patents at the Patent Office—a task which is necessary either before making applications for letters patent or before completing same. The volumes are prefaced by very full indexes, one giving the subject-matter and the other the name of the patentee.

The Closing of Chicago Exhibition. — The executive committee of the World's Fair directorate has decided to close the exhibition on October 31. The following are the World's Fair awards in the Transportation Section:—Morgan & Co. (Limited), for a four-in-hand drag, a canoe-shaped landau, a rustic dogcart, a mail-phaeton, harness, whips, aprons, &c.; the Raleigh Cycle Company, for bicycles; Loughboro & Gedde, for carriage-door improvements; the Quadrant Cycle Company, for tricycles and bicycles; the Metallic Tube and Flask Company, for needles and cold-drawn steel tubes; Warman & Hazlewood, for four-track racing bicycles; the Premier Cycle Company, for bicycles and tricycles, and cycle parts; Mr. T. H. Briggs, for method for attaching horses to vehicles; Mr. Thomas Briggs, for patent top-cart and brake. In Group 18, Price's Patent Candle Company have received five awards, viz.—for stearine, paraffin, toilet-soap, glycerine, and candles.

Gospel Oak Iron Company (Limited) v. Dowling.—In the City of London Court on September 19, the plaintiff company, 675 Commercial Road, sought to recover the sum of 37*l.* 9*s.* 2*d.* against J. L. Dowling & Son, Grand Avenue, Leadenhall Market. Mr. Bramall explained that the action was brought in the High Court to recover 37*l.* 9*s.* 2*d.* for jacket-pans supplied to the defendants for use in their business. Under the order of the High Court, 30*l.* had been paid into court. The defendants and plaintiffs had had dealings together for twelve years. The plaintiffs supplied the defendants with three jacket-pans. They worked well for a time, and were warmed by steam, but subsequently complaints were made and the plaintiffs repaired the articles. Finding that the defendants had completely spoiled the pans by using too much steam, the defendants ordered others, and these were supplied at a very much reduced figure (6*l.*), the real cost being 12*l.* This the defendants now refused to pay, as well as a small charge for repairs. Mr. Deputy Dowling, in his evidence for the defence, stated that the plaintiffs should not have supplied the thin pans which were sent in at first. If they had properly executed

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the work the pans would have answered the purpose for which they were intended. This, however, they did not do, and he accordingly refused to pay the 6*l.* for the second lot of pans, the plaintiffs not having done their work in a satisfactory or efficient way. The learned deputy-judge found for the plaintiffs for 6*l.* beyond the 30*l.* paid into court.

Fires.—On the night of September 22, Poynter's Oil-stores, 64 Greenwich Road, S.E., were burned down. Mr. Poynter, in reaching some goods from a top shelf, knocked over a large oil-lamp, which, falling on the floor, broke, and its scattered contents igniting, the inflammable surroundings soon caught fire, and quickly spreading to a small oil-tank, set light to the whole shop.—An outbreak of fire occurred last week on the premises of Thornton & Co., 90 Gordon Street, Edinburgh, indiarubber manufacturers. It originated through the dropping of a light into the cellar, to which part of the premises the fire was confined. Damage to the extent of 400*l.*, which is believed to be covered by insurance, was caused.—About 11 o'clock on Saturday last an explosion occurred on the premises of Mr. H. J. Lloyd, St. Helen's Chambers, York, cycle-agent, &c. At the top of the building a quantity of gunpowder and gun-cartridges were stored, and in this room a boy, about fourteen years of age, was engaged filling cartridges with shot, near to which stood a canister containing about 2 lbs. of smokeless gunpowder, and this from some unknown cause exploded. The explosion blew out one of the windows and the door, and displaced a quantity of the woodwork. The ceiling of the room was lifted, a large crack being made all round the room, and one of the walls was also cracked. The shock of the explosion blew down the ceiling of the room below that in which the explosion occurred. Fortunately no one was seriously injured.

Associated Chambers of Commerce.—The annual meetings commenced at Plymouth on Tuesday, under the presidency of Sir Albert K. Rollit, M.P., among those present being the Earl of Morley, Lord Clinton, Sir Edward Clarke, the Right. Hon. L. H. Courtney, Sir H. S. Northcote, Mr. Arnold Forster, M.P., and 300 delegates, representing chambers of commerce in all parts of the United Kingdom. It was proposed by Mr. Hooper (London) that the Government be urged to continue their efforts to protect British interests in Siam. Mr. Walter (Middlesborough) moved:—"That this association represent by deputation to her Majesty's Government the necessity for the adoption of a more enterprising policy, in order to secure the rapid extension of the railway systems of India and Burmah in the interests of the trade and commerce, not only of these countries, but also of Great Britain, and further urges that the British Government should not hesitate to further supplement what the Government of India is able to do by guaranteeing interest on the necessary outlay so far as may be needful to obtain the required capital." Mr. Tonks (Birmingham) moved:—"That the proposals of the Imperial Federation League are worthy of support, as they embrace suggestions of urgent importance to the manufacturing and mercantile community." Mr. Wilson (South of Scotland Chamber) moved:—"Powers having now been given by the passing of the Technical Education Act, by which school boards can institute classes for technical and commercial education, this Congress again impresses upon the chambers in whose districts these subjects have not been taken up, that they should use their influence to have classes in these subjects instituted." Mr. Hoffman (Bradford) moved a resolution in favour of the adoption of the decimal system for money, weights, and measures. Three resolutions on the subject of railway rates were carried after a brief discussion. The first insisted upon the necessity for a special tribunal to settle disputes between the companies and their customers. The second welcomed the assurance of the principal companies that the increased rates charged from January 1 were being revised. The third pointed out that the present charges for returned empties are excessive. The Wakefield Chamber submitted the following resolution:—"That in the opinion of this association, it is unfair to the public that the telegraphic department of the Post Office should for financial purposes be treated as a separate establishment, thereby causing unwarrantable delay in carrying out urgent and much-needed reforms; that inasmuch as the postal establishment and its various departments are in their entirety a financial success, the time has arrived when the address of not exceeding six words should be allowed free of charge in all telegraphs, and that telegraphic communication should be extended to rural districts where practicable, and that a deputation wait upon the Postmaster-General to urge upon him the desirability of adopting this suggestion." On the agenda were the three following resolutions:—"That the General Post Office should, as far as possible, provide accommodation enabling the public to write letters in the various post-offices throughout the country." "That the Post Office authorities be urged to allow samples of liquids to be sent to the Continent, as they are received from the Continent—viz., by pattern-post—as the present practice imposes upon the traders of the United Kingdom an unfairly increased cost." "That the Executive Council be requested to call the attention of the Postmaster-General to the inconvenience caused by the frequent loss in transit through the post of patterns and goods addressed to correspondents abroad, and sent by unregistered pattern or parcel post." Each of these resolutions was carried. Other subjects dealt with were timber measurement, the register of shipping, bills of lading, the Irish lighthouse service, and the rating of machinery.

OBITUARY.

[Intimations of the deaths of those connected with the trade should be sent to us as early as possible, with concise details of the business careers of the deceased persons.]

DANKS.—The last mail from New Zealand brought the tidings of the death, at Wellington, of Mr. Samuel Danks, formerly of Wednesbury, South Staffordshire, where, thirty-five years ago, he was extensively engaged in the manufacture of gas and water tubes. In the year 1862 he, with his brother John, emigrated to Australia, commencing business in Melbourne as importers of tubes. They also started a brassfoundry with considerable success. After twenty years of partnership the brothers separated, and Mr. Samuel Danks, with his son, went to Wellington, New Zealand, commencing a business as engineers and ironfounders, which grew and prospered. The deceased gentleman was a member of the City Council of Wellington, and was connected with the Hospital Board and other philanthropic institutions. He was much respected for his quaint straightforward speech, honesty of character, and sterling worth.

HALDANE.—Mr. Gilbert Haldane, Glasgow, iron-merchant, has just died at the age of thirty-nine. He was a member of the Scottish Pig-iron Trade Association, and well known in iron circles, having been for many years pig-iron salesman for Merry & Cuninghame before commencing business on his own account.

HAWKSLEY.—The death occurred on Saturday of Mr. Thomas Hawksley, F.R.S., one of the most eminent and best-known civil engineers of the present day. He was born at Nottingham in 1807, and began practice at an early age. In 1852 he removed to London, where he had stood for a long period at the head of that branch of the profession having to do with water and gas supply, and with drainage and hydraulic works generally. His practice in this line was very large. He himself was accustomed to say that he had constructed above a hundred and fifty waterworks, many of the largest character; and that there were no important towns in Great Britain, and, indeed, very few great cities in the civilised world, in regard to which he had not been professionally consulted in some way or other. Among the waterworks he constructed, about 1850, for Liverpool, the Rivington Pike works (then considered the largest in existence) for obtaining a supply from hills twenty-two miles distant; and he was more recently connected with the still greater work of bringing to the same town water from the sources of the Severn in North Wales. At the time of his death he had large extensions in hand for many of the chief provincial towns as well as for Newcastle-on-Tyne and Bristol. The number of gasworks constructed by him is very large, including those for Nottingham, Derby, Sunderland, Cambridge, Lowestoft, and Bombay; and among the towns in which he designed e sewerage arrangements may be mentioned Birmingham, th orcester, Hertford, Windsor, Whitehaven, and Aylesbury. W

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WHITWORTH.—We much regret to record the death of Mr. Benjamin Whitworth, J.P., which occurred at his residence, Hampstead, on Sunday last. The deceased gentleman was the fifth son of the late Mr. Nicholas Whitworth, of Manchester. He was born in Manchester on May 24, 1816. After serving his time as an apprentice, he was partner with Mr. John Hoole, dissolving from him in 1842, when his brother Alfred, and subsequently his other brothers, Robert and William, joined him, forming the well-known firm of Benjamin Whitworth & Brothers, fustian manufacturers. Mr. Whitworth resided at Fleetwood from 1849 to 1862, and was J.P. for the county of Lancaster. He afterwards lived at Prestwich, then at Lymm, removing in 1868 to London, where he has since resided. At Fleetwood Mr. Whitworth largely interested himself in the shipping, timber, and cotton trades. He also erected the Public Hall. In Drogheda, for

which borough he was first returned to Parliament in 1865, he originated the present waterworks, finding more than half of the capital, and also built and handed over to the town the Whitworth Hall at a cost of 4,000*l.* Boyne Mills, holding 100 looms, were established and worked by his firm till its sale three years ago to Mr. Thomas Dickson. Mr. Whitworth was all his life a total abstainer and strong temperance advocate, and was a director of the United Kingdom Provident Institution. Mr. Whitworth was also largely interested in the coal and iron industries, and was one of the originators and first directors of the following limited companies:—Bolckow, Vaughan & Co., Tredegar Coal and Iron Company, John Brown & Co., Cortonwood Colliery Company, Staveley Coal and Iron Company, and Sheepbridge Coal and Iron Company. The deceased gentleman was for many years a director of the Metropolitan Railway Company, the Manchester Carriage and Tramways Company, and numerous other undertakings. In politics Mr. Whitworth was at one time an advanced Liberal, but since 1886, through his inability to follow Mr. Gladstone on the Irish question, has ranked as a Liberal Unionist. About three years ago Mr. Whitworth had a sharp apoplectic attack, and never really recovered from its effects. The immediate cause of death was general debility. His hand having been hurt a few weeks ago developed into blood-poisoning. Mr. Whitworth leaves a widow (the daughter of Mr. Thomas Walker, Salford) and three sons and four daughters.

RHODES.—The death has occurred at Adelaide of Mr. William Rhodes, of the firm of W. & T. Rhodes, hardware merchants in that city. Mr. Rhodes was born in Birmingham in 1825, and was the son of Mr. George Rhodes, a well-known file manufacturer, who emigrated to the colonies in 1849, commencing an ironmongery business in Adelaide under the style of "G. Rhodes & Son," and subsequently starting a tinware factory. The deceased gentleman occupied a leading position in the commercial life of Adelaide, and devoted his leisure hours to the cultivation of flowers, a recreation of which he was remarkably fond.

SELBY.—Mr. Peter Selby, for many years a well-known hardware merchant in Birmingham, died a few weeks ago in Sydney, to which city he emigrated in 1884, and where he was well established as an importer of English hardwares, especially those produced in Birmingham and the Black Country. The deceased, who was most highly respected, leaves a widow, two daughters, and five sons, all resident in New South Wales.

THOMSON.—Mr. W. G. Thomson, senior partner of the firm of Thomson, Son & Co. (Limited), Douglas Foundry, Dundee, was found dead in bed at his residence, Fairfield, West Ferry, on Saturday morning. He was identified with the trade of Dundee for upwards of forty years, and was looked upon as an engineer of eminence, having been arbiter in certain very important cases.

WEAVER.—The science of electric telegraphy has suffered a severe loss by the death of Mr. Henry Weaver, the managing director of the Anglo-American Telegraph Company, who has just died suddenly at Folkestone, from heart-disease, at the age of sixty-eight. He was born at Shrewsbury on May 5, 1825, and entered the service of the Electric Telegraph Company at the age of twenty-one. After the transfer of the inland telegraphs to the State he took the management of the Anglo-American Telegraph and the Atlantic Telegraph Companies, which position he had held since the beginning of January, 1870. He originated the "word" system of counting and charging messages, and introduced it in the Atlantic cables in May, 1872.

TRADE NOTES.

[We are always glad to receive PROMPT intimations of the starting of firms, dissolutions of partnerships, changes of addresses, and other notices suitable for insertion under this head. All communications must be fully authenticated.]

Swindlers in Holland.—As we understand that manufacturers in this country are still being victimised by unscrupulous individuals in Holland, we again invite subscribers who may receive inquiries from that country from unknown persons to communicate with us before parting with their goods. A further list of swindling firms has been sent to us recently. Inquirers will please enclose a stamped envelope for reply.

Hughes & Lancaster, sanitary engineers, have removed to Albany Buildings, 47 Victoria Street, Westminster.

The Acme Steel and Foundry Company, 81 Garngad Road, Glasgow, have dissolved partnership. Business continues under the same style.

Alex. Shanks & Sons will offer for sale on October 3, as a going concern, their Dens Ironworks, Arbroath. The reserve price is 20,000*l.*

Tinplate-works are to be erected in the neighbourhood of Llanelly, a number of local gentlemen being at present in negotiation for the purchase of land there for the purpose.

Llandudno Town Commissioners propose to spend 2,300*l.* in improvements at their gasworks. Tenders are expected to be invited shortly.

Ironmongers, Managers, Assistants, Apprentices, Designers, &c., should refer to pages 568 and 588 of this issue for full particulars of further prize competitions.

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George Bradshaw & Co., metal merchants, have removed from Arcade Chambers to Mawson Chambers, 28 Deansgate, Manchester.

Humphreys (Limited), Knightsbridge, S.W., iron-building contractors, have received an order from the Eston Local Board for the supply and erection of one of their iron isolation-hospitals for infectious diseases.

The New Albion Steelworks Company is the title of a concern which has been formed to lay down a plant for the manufacture of steel tinplate-bars by the Siemens-Martin process at Briton Ferry.

Shand, Mason & Co., Upper Ground Street, E.C., have orders to supply one of their "Curricle" fire-escapes and apparatus to Bournemouth Town Council for use at Boscombe.

Leslie & Hall, 48 Cadogan Street, Glasgow, have obtained the contract to supply the lighting department of Glasgow Corporation with tinplates, sheet copper, &c., for the next six months.

The Cradley Boiler Company, Cradley Heath, have just completed their first order for one of the Government departments, and have given them so much satisfaction that they have ordered from the firm a further lot of goods of the same kind.

Barclay, Mackay & Co, Royal Exchange, Glasgow, have been appointed sole agents in Scotland and in Belfast for John Wilkinson & Sons, Adderley Road Rolling-mills, Saltley, Birmingham. A specialty of this latter firm is the production of solid-drawn brass locomotive marine and condenser tubes.

Correction. — The telephone illustrated amongst the novelties of our last issue was inadvertently described as a mechanical apparatus. The makers, W. H. Baughan & Co., Charlbury, ask us to state that it is an electrical telephone, as, indeed, can be at once seen on reference to the illustration.

Robert Adams & Son, 14 East Maitland Street, Edinburgh, furnishing ironmongers, have installed the electric light in their warerooms. The work was carried out by Mr. Mathew Buchan, Portobello. The dynamo is of seventy 16-candle power capacity, and is driven by an 8½-horse power Crossley gas-engine.

Technical Instruction in Plumbing.—A correspondent directs our attention to the fact that the borough of Kingston-upon-Thames technical-instruction scheme for 1893-94 includes a class for theoretical and practical plumbing, conducted by Mr. Kemsley, A.M.S.I., R.P.C., not restricted to plumbers only, but open to all. This is, of course, as it should be.

Holman Brothers, Camborne, ironfounders, have installed the electric light on their premises. The work was carried out by Veale & Co. (Limited), who have fitted up forty-six glow-lamps, and several arc-lamps, ranging from 2,000 to 500 candle-power, the current being generated by a Crompton dynamo. This is the first electric-light installation in Camborne, and, with the exception of the Dalcoath mine, the first in the neighbourhood.

Sale of Trade-marks.—Mr. R. C. Horner, Sheffield, has sold by auction the trade-marks of John Baker & Co. The corporate mark was "Phœnix," with the figure of a bird; and the two registered trade-marks were "Merit," with the figure of a clown, and "Shepherd," with the figure of a shepherd. A number of patterns, travellers' samples, cost and description books, marks, &c., were also included in the sale. The price realised for the lot was 180*l.*

Mr. H. C. Whincop, Smethwick, is erecting a lightning-conductor on the spire of Brewood Church, Staffordshire, which was lately struck by lightning. The need for protecting spires and other prominent points against the electric fluid is shown by the fact that when the spire was struck the fluid descended to the beam, which it shattered and charred. Then it passed down the side of the spire 20 feet to the clock-weights, and thence by way of the wire holding the weights into the clock, which it disarranged, afterwards running down the pendulum into the eight bells, where it appears to have expended its energy.

Important Armour-plate Orders for Sheffield.—Charles Cammell & Co. (Limited), Cyclops Works, have received a good order for armour-plates for H.M.S. *Renown*, now in course of construction in the Government dockyard at Pembroke. Vickers, Sons & Co. (Limited), River Don Works, have also received a good order for armour-plates for the same vessel.

Lloyd & Lloyd, Birmingham, have lately produced what are believed to be the largest coils of wrought-iron tubes ever made in this country. The order was for twenty coils, each of which measures 33 feet long by 5 feet high, and contains about 1,500 feet of tube in one continuous length, without joints. They have been delivered at Hebburn, near Newcastle-on-Tyne, for the steamer *Perthshire*, which Hawthorn, Leslie & Co. are now building. The coils are made from the best quality of wrought-iron tubes, and before leaving the works they were tested to a very high pressure. The railway company had to provide special trucks to enable them to pass through the tunnels, and they also sent an inspector through with the train to ensure safe delivery. The coils formed, indeed, quite a train-load by themselves. A similar plant is in course of manufacture, and is shortly to be delivered, for a sister ship, which also is now being built at Hebburn.

The Shaw's Brow Iron Company, Liverpool.—A meeting of the creditors of this company was convened at Birmingham on Thursday, September 21, to consider a proposal from Mr. W. S. Caine, M.P., for its liquidation. Mr. Isaac Jenks, Wolverhampton, presided. Mr. Caine explained that for many years he had taken no active part in the management of its affairs, and had every confidence in his partner, Mr. A. S. Cox, with whom he had been intimately associated for twenty years. The company was formed in 1877, and for twelve or thirteen years had been very profitable. Since 1890, however, the old traditions of the business had been neglected, and operations altogether foreign to its policy had taken place, and these had resulted in heavy losses. Mr. Caine said he had only been made aware of this within the last few weeks. The moment he discovered the condition of the business he called in Mr. T. W. Read, a well-known accountant in Liverpool, who found that the concern was insolvent. Mr. Caine then convened the creditors of the company, and proposed a scheme by which all creditors under 100*l.* should be paid at once in full, the company be privately liquidated, and the deficit eventually provided from Mr. Caine's other resources, which are considerable. The meeting adopted these proposals unanimously, appointed Mr. Caine himself liquidator, leaving themselves practically without reserve in Mr. Caine's hands, expressing their entire confidence in his honour in carrying out the arrangement, and asking neither security nor promissory notes. Mr. Caine asked that a small advisory committee should be appointed, and three of the largest creditors consented to act. The whole arrangement was of a private and friendly character, and every creditor will be paid in full, with interest. We are glad to be able to say that, though Mr. Caine's private income will suffer some strain for a year or two, the trade will not lose his services in Parliament, which is a matter for congratulation in view of the extremely valuable services rendered by him to us in connection with the Plumbers' Registration Bill and the Sale of Pistols Bill a short time ago.

Re R. L. Muir.—The examination of this bankrupt, an ironmonger at Motherwell, was commenced before the Sheriff at Hamilton last week. The trustee, Mr. James M'Lay, C.A., Glasgow, stated that a composition had been offered by the bankrupt, and the diet was adjourned. The net assets, according to the state of affairs produced, amounted to 959*l.* 9*s.* 9*d.*, and the liabilities to 1,647*l.* 18*s.* 9*d.*

Re G. Aston & Son.—The debtors, trading as founders and iron contractors, at City Wharf, Eagle Wharf Road, had a receiving order made against their estate on August 16, and the usual summary was now issued. It stated that the foundry was established by the debtors' father thirty years ago at 28 Charlotte Street, Great Eastern Street. The joint liabilities amount to 17,360*l.*, of which 12,015*l.* is expected to rank, and the assets are estimated at 4,526*l.* The first meeting stands adjourned to October 6, to enable the debtors to lodge an amended proposal for a scheme of arrangement.

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Re F. C. Manico.—At the offices of the Sheffield Official Receiver a meeting was called of the creditors of Edward Calley Manico, 1 Metal Buildings, London, cutlery manufacturer, who formerly carried on business in West Street. The Official Receiver stated that the debtor owed to unsecured creditors 1,906*l.* 17*s.* 5*d.*, and estimated his assets at 58*l.* 14*s.* 2*d.* He did not think, however, they would realise anything like that. Debtor commenced business about two years ago with 200*l.* When in business in West Street last year legal proceedings were taken against him and were decided against him in some respects, and he lost money. He sold his business to his son and another party for 100*l.* He paid away a portion of that and lived on the remainder. He did not know that anything could be done with the case until the public examination. Mr. Nicholson stated that debtor would like it to be known that of the unsecured debts 850*l.* had always been treated as a gift and not as a debt. The Rev. Stanley Mitchell some years ago advanced him 600*l.*, and had written to the Official Receiver to say he had long ago ceased to regard it as a debt. The other 250*l.* was owing to debtor's wife. The Official Receiver: "Who can't prove." Mr. Nicholson: "But she has always treated it as a gift." It was further stated that of the remaining sum over 800*l.* were the costs in the trade-marks action to which reference had been made, about 400*l.* being due to the plaintiff and 400*l.* being the defendant's costs. In addition, debtor had paid 150*l.* to his solicitor on account. Mr. Nicholson thought this showed debtor to be solvent when the trade-mark proceedings commenced, but the Official Receiver remarked that it showed him to be insolvent, as, if 800*l.* were taken from the thousand which remained it left 200*l.*, whereas debtor only had 50*l.* In the end the matter was left in the hands of the Official Receiver.

PRICES AND DISCOUNTS.

[Catalogues, Price-lists, &c., should be sent to the Editor immediately they are ready for being issued. Old Catalogues and Price-lists cannot be noticed under this head.]

The following firms, &c., have issued new and revised catalogues and price-lists:—

Skates and Skate-straps.—A wholesale price-list of these season goods is now ready for issue by **T. Mabane & Sons**, Belgrave Works, Leeds. Drawings are shown of "Acme," skeleton, and "Caledonian" steel skates, wood skates, and skate-fittings, together with skate-straps in three qualities and various lengths. Mabane & Sons possess patent machinery for preparing leather for straps, and for cutting and punching them, and can turn out 1,000 "Albert" toe-straps per hour.

Lift-gears, &c.—**Mr. J. Stannah**, 20 Southwark Bridge Road, has issued a price-list of "Southwark" lift-gears, carefully revised and enlarged, and with the addition of particulars relating to cages, ropes, balance-weights, &c. The list, though consisting of four pages only, gives quotations and information respecting nearly one hundred sizes of lifting-gears, including double and single purchase crab-winches, sack-hoists, &c., and will be found very useful to all who deal in or require appliances of this nature.

Wine and Beer Mullers, &c.—An illustrated broadside price-list reaches us from **Mr. Chas. Lee**, Freeman Street Works, Birmingham, containing drawings and prices for mullers of various shapes and sizes, such as lemon, pear, and oval patterns; shade, "chic," and "Empire" mullers; pillar and other urns, ale-measures, tankards, spirit-measures, spittoons, ale-warmers, copper funnels, atmospheric burners, and so on. Most of these goods are supplied in brass or copper, and also nickel-plated and electroplated.

Sanitary Appliances.—An illustrated catalogue of sanitary appliances and plumbers' furnishings has been issued by **William Macleod & Co.**, 1 Robertson Street, Glasgow. The contents comprise drawings of cast-iron baths, independent spray, plunge, and shower baths, baths in copper, fireclay, and zinc, bracket shower and hand sprays, cabinet and other lavatories, earthenware urinals, trough-closets, enamelled washtubs, wash-out closets, valve and syphon cisterns, closet-seats, bath and basin gratings, brass water-fittings, colonial and other pumps, rain-water goods, drain and sewer pipes, circulating-boilers, copper tubes, &c.

Sheet-metal Goods.—A list containing a selection of goods from their illustrated catalogue for the winter season of 1893, which can be shown to customers, is now ready for circulation by **R. & W. Wilson & Sons (Limited)**, Wardour Street, W. The articles illustrated represent coal scoops and hods, japanned coal-vases, coal-bunkers, sifting-pails, hand-scoops, fire-baskets, candlesticks in many patterns; police, bull's-eye, van, stable, and warehouse lanterns; oil bottles and drums; oil fillers, pumps, and measures; pigs, hot-water cans, carriage and foot warmers, bronchitis-kettles, tea-trays, dish and plate covers, cowls, stove-pipe elbows, cake-pans, enamelled wrought-iron goods, urns, pie-warmers, galvanised goods, stoves and radiators, food-warmers, blowers for stoves and ranges, gas-heated baths, and so on.

Agricultural Implements, &c.—A series of new price-lists for the season has reached us from **Bamford & Sons**, Leighton Ironworks, Uttoxeter. One of these is an abridged list suitable for carrying in the pocket. It has an illuminated cover, and is a neat and nice-looking little catalogue. Though small, it contains a concise description of the principal articles made by the firm, including the patent "Rapid" grinding-mills of the latest and most improved patterns, new patent "Clipper" chaff-cutters, with unbreakable wrought-iron framings, horse-gears, root-cutters, pulpers, oilcake-mills, pumps, &c. In the larger lists fuller particulars will be found of these implements, the information as to grinding-mills, giving the various sizes, prices, and capacities of each and all of Messrs. Bamford's productions in this department, also selections from testimonials, and a list of recent awards obtained in competition at important trials.

NEW COMPANIES.

London and Provincial Tinplating Company (Lim.), with a capital of 2,000*l.*, in 1*l.* shares; to carry on the business of tinplate manufacturers and workers, solder merchants, ironfounders, machinists, &c. There shall not be more than five nor fewer than two directors, and the first are F. Redman and W. R. Nichols. Remuneration, 5 per cent. on the turnover of the company. Registered office, Channel Row, Bermondsey, Surrey.

Atlas Rolling and Wire Company (Limited), with a capital of 10,000*l.*, in 5*l.* shares; to establish, acquire, and carry on the business of manufacturers of iron and steel, of all kinds of hot and cold rolled steel and wire, umbrella and parasol frame manufacturers, wire-drawers, wire manufacturers, and other similar undertakings. The first subscribers (who take one share each) are:—J. Newton, Ranmoor Cliff Road, Sheffield, accountant; J. Newham, Sheffield, cutlery manufacturer; H. Pawson, jun., Claremont Terrace, Sheffield, stationer; H. Dunstan, Bramber Street, Sheffield, cashier; G. Smith, Sheffield, manager; W. Ding, Bradfield, Sheffield, accountant; W. A. Richards, Sheffield, clerk.

Hadley Cycle Company (Limited), with a capital of 30,000*l.*, in 1*l.* shares; to carry on the business of manufacturers of cycles, velocipedes, and carriages of all kinds, also all apparatus and implements for use in sports, games, and recreations. The first subscribers (who take one share each) are:—W. Francis Meyer, Hampstead Heath, jeweller; F. A. Pickford, Solent Road, West Hampstead, merchant; A. J. Begbie, Burghley Road, Highgate Road, N.W., silversmith; H. J. Treasure, Rudall Crescent, Hampstead, cycle dealer; J. H. Begbie, Highgate Road, N.W.; S. D. Begbie, Fortess Road, N.W., cycle manufacturer; P. C. Twentyman, Fortess Road, N.W., cycle manufacturer. The first directors are W. F. Meyer, F. A. Pickford, A. J. Begbie, S. D. Begbie, and P. C. Twentyman. Qualification, 250*l.* Remuneration, 25*l.* per annum each and a commission of 10 per cent. upon every 1 per cent. of the dividend paid to members over and above a dividend of 7 per cent.

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The Electro-protector Syndicate (Limited), with a capital of 10,000*l*, in 1*l*. shares; to carry on the business of electricians, mechanical engineers, &c. The first subscribers (who take one share each) are:—C. O. Greenwell, Elizabeth Street, S.W., gentleman; E. G. Saunders, Barnes, S.W., gentleman; C. E. Masterman, Thoring Hedge Road, Gunnersbury, engineer; A. H. Portch, Scylla Road, Peckham Rye, clerk; T. E. Smith, Clifton Crescent, Sutton, Surrey, secretary; A. W. Letts, Broad Street Avenue, E.C., secretary; R. R. Garratt, Broad Street, Avenue, E.C., agent. The first directors are T. Beard, A. H. Macnaghten, E. S. Claremont, and H. E. Saunders. Qualification, 50*l*. Remuneration, 50*l*. per annum.

Marchant, Young & Co. (Limited), with a capital of 4,000*l*., in 1*l*. shares; to establish and carry on the business of electrical and mechanical engineers. The first subscribers (who take one share each) are:—S. F. St. J. Steadman, Old Broad Street, E.C., solicitor; J. E. Marchant, Clerkenwell Road, London, engineer; C. F. Young, Woburn Place, Russell Square, W.C., electrical engineer; H. G. Campion, Old Broad Street, E.C., solicitor; G. Groves, Sarsfield Road, Balham, clerk; P. H. Robson, Percy Road, North Finchley, clerk; G. G. Hay, Chesterton Road, North Kensington, W., clerk. There shall not be more than six nor less than two directors, and the first are B. J. Young (chairman), J. E. Marchant, and C. F. Young. Remuneration to be determined in general meeting. Registered office, 166 Clerkenwell Road, London.

The Yniscedwyn Tinplate Company (Limited), with a capital of 12,000*l*., in 50*l*. shares; to carry on the business of iron, steel, and tinplate manufacturers, ironfounders, steel-converters, &c. The first subscribers (who take one share each) are:—B. H. Thomas, Yniscedwyn, tinplate manufacturer; Margaret J. Thomas, same address; E. R. Griffith, Yniscedwyn, farmer; D. J. Thomas, Cwmtwrch, contractor; Alice A. Jeremiah, Cwn Du, Swansea, spinster, E. G. Thomas, Ystalyfera, bank manager; G. Jeremiah, Cwmdu House, Swansea, ironfounder. The first directors are to be appointed by the subscribers. Qualification, 1,000*l*. Remuneration to be determined in general meeting. Registered office, Yniscedwyn, Ystradgynlais, Brecon.

Jeremiah Cowdy & Co. (Limited), with a capital of 10,000*l*., in 1*l*. shares; to acquire and carry on the business of iron and steel merchants, lamp manufacturers, and wholesale ironmongers, now carried on by Jeremiah Cowdy & Co., at 40A Queen Street, E.C., under the name of "Jeremiah Cowdy & Co." The first subscribers (who take one share each) are:—J. Cowdy, Queen Street, E.C., iron and steel merchant; J. B. Cowdy, Queen Street, E.C., iron and steel merchant; G. Simmons, Queen Street, E.C.; J. Hoyle, Brockley, S.E., accountant; R. N. Panew, Maze Hill, S.E., clerk; T. L. Smith, Queen Street, E.C., clerk. The first directors are S. J. Cowdy, J. B. Cowdy, T. J. Dawes, and G Simmons. Qualification, 500*l*. Remuneration, 1,000*l*., to be divided amongst them.

American Seddon's Tire Company (Limited), with a capital of 60,000*l*., in 1*l*. shares; to acquire patent rights in the United States, and to carry on business as tyre manufacturers and merchants, cycle manufacturers, brassfounders, engineers, cutlers, ironmongers, safe-makers, &c. The first subscribers (who take one share each) are:—W. Bowden, Barlow Range, Chorlton, director; W. J. Burnett, Reddish Road, Stockport, cashier; E. H. Seddon, Ashton-on-Mersey, gentleman; J. C. Brister, High Lane, Chorlton, manager; A. Diggle, Briddon Street, Collyhurst, clerk; T. Gaythorpe, Vere Street, Salford, clerk; W. Brierley, Rock Street, Bury, auctioneer. There shall not be more than four nor fewer than two directors, and the first are W. Brierley, E. H. Seddon, S. Y. L'Hommedieu, and W. Bowden. Remuneration, 50*l*. per annum each. Registered office, Cornwall Street, Openshaw, Manchester.

Calvert & Co. (Limited), with a capital of 2,000*l*., in 1*l*. shares; to acquire the mechanical and general engineering manufacturers' business carried on at Orchard Works, Orchard Street, Wandsworth, under the style of "Calvert & Co.," and to carry on the business of engineers, manufacturers of trade, marine, agricultural, and other engines, machinery, apparatus, and implements of every description. The first subscribers (who take one share each) are:—R. W. James, Queen Victoria Street, E.C., engineer; J. C. Forry, Queen Victoria Street, E.C., engineer; F. H. E. Shipton, Orchard Street, Wandsworth, engineer; H. Thame, East Hill, Wandsworth, engineer; J. Hewett, Mill Street, W., electrical engineer; P. L. H. Canning, Hogarth Road, S.W., solicitor; C. S. Howitt, The Croft, Hampton-in-Arden, gentleman. Registered office, Orchard Works, Orchard Street, Wandsworth.

COMPANIES' REPORTS AND DIVIDENDS.

Secretaries of Companies, &c., are requested to send us copies of their reports and balance-sheets immediately they are ready for being issued.

Ashton Vale Iron Company (Limited).—The directors recommend the payment of a dividend of 2 per cent. for the past year.

Glenboig Union Fireclay Company (Limited).—At a meeting of the directors of this company, held in Glasgow on Monday, it was agreed to recommend, subject to completed audit and after writing off 4,000*l*. for depreciation, a dividend of 5 per cent., less income-tax, for the year ending August 31 last, carrying forward a balance of upwards of 1,300*l*.

The Darlaston Coal and Iron Company (Limited).—The directors' report states that receipts were seriously affected by the severe depression from which the coal trade suffered throughout the year. Demand in consequence fell off in a manner almost without precedent, whilst prices became seriously lowered without any corresponding reduction in wages. The expenses of the year exceeded the receipts by 2,788*l*. 2*s*. 3*d*.

Leadhills Mining Company (Limited).—Mr. Peter Watson presided over the ordinary general meeting of the Leadhills Silver-Lead Mining and Smelting Company (Limited), held at the offices, 30 Finsbury Circus, E.C. In moving the adoption of the report the chairman said they had, like other lead companies, to regret that, owing to the continued unprecedented depression in the price of lead, they could not work their mines at a profit. When they commenced work, in 1876, the price of pig lead was 12*l*. 1*s*. 4*d*. per ton, but it had now fallen to under 10*l*. The lowest point it had reached was 9*l*. 2*s*. 6*d*. per ton, but, fortunately for them, they were not compelled to sell at that price. If they had been, their loss on the year, instead of being 2,173*l*., would have been nearer 3,173*l*. Mr. Geen seconded the motion, which was agreed to.

Price's Candle Company (Limited).—A half-yearly meeting of the proprietors was held at the Cannon Street Hotel, London, on September 22, for the purpose of declaring a dividend. Mr. T. C. Wright presided, and moved that a dividend of 10*s*. per share be paid for the half-year ended June 30, as against 12*s*. 6*d*. per share for the corresponding half of 1892. He explained that at their last meeting they commenced a reserve fund to the amount of 5,000*l*., and wrote off 12,500*l*. for depreciation, leaving 7,825*l*. to be carried forward. The manufacturing profits for the past half-year amounted to 30,865*l*., and after deducting the income-tax there was a balance of 30,012*l*, almost precisely the same as for the corresponding half of 1892. Under the present state of trade, when hardly any business was showing a profit, they thought it prudent to pay a smaller dividend and carry forward a larger sum (19,000*l*.), in the hope that they would be able to pay the full amount in March next. Sir Peter Spokes seconded the motion, which was adopted.

Thomas Warwick & Sons (Limited).—The report states that the past year's trading, compared with the profits made the previous year, is not so satisfactory as was anticipated. The change made in the latter part of the year by the principal tyre-manufacturing company in their patent tyre required a great amount of experimental work before suitable rims were manufactured, and practically for three months

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the company was unable to supply its principal customers with their special requirements. After paying management expenses and directors' fees, the balance of profit is 3,438*l.* 12*s.* 7*d.*, to which is to be added the balance carried forward from last year, 234*l.* 16*s.*, making the total amount available for distribution 3,673*l.* 8*s.* 7*d.* The directors recommend the payment of a dividend of 6 per cent. on preference shares, and a dividend of 6 per cent. on ordinary shares, to write off goodwill 762*l.* 5*s.* 2*d.*, and to carry forward to next year 211*l.* 3*s.* 5*d.* The directors further recommend that the sum of 2,000*l.* which was brought forward from last year as a temporary reserve be now placed to the credit of the goodwill, patents, and licence account, reducing that amount from 19,762*l.* 5*s.* 2*d.* to 17,000*l.*

Steel Company of Scotland (Limited).—At the annual meeting of this company, held in Glasgow last week, the chairman said the report was not such as they could have wished, showing, as it did, a small loss as the result of the year's business; but it was on the whole fully as good as they could have looked for in the adverse circumstances of the trade of the country during that time Last year steel plates fell to 5*l.* 15*s.* to 5*l.* 17*s.* 6*d.* per ton for Clyde delivery. This year they had been as low as 5*l.* 15*s.* to 4*l.* 10*s.* Raw material had fallen also, but not at all to an extent commensurate with the fall in steel. The competition from the North of England had made itself more felt; and he regretted that they were very considerably handicapped in this competition by the heavy charges which had to be borne by steel shipped at the port of Glasgow. The Glasgow port dues on steel were 1*s.* per ton higher than those of the Tees or the Tyne, and the arrangements for conveying material to the ships were so bad or imperfect that frequently as much as 1*s.* 7*d.* per ton had to be paid to carry steel from the railway-waggons to the ship. Bearing these facts in mind, it was satisfactory to find that they had passed through the year so well as they had done—namely, with a gross trading profit of 21,017*l.*, and a net loss, after all charges and expenses, of 1,604*l.* The prospects of the trade were rather better. They had a fair amount of contracts on their books and of orders in hand, and they thought there were grounds for expecting an increase in both, and an advance on the low prices prevailing.

Nettlefolds (Limited).—An extraordinary general meeting of the company was held at Birmingham on Monday, Mr. J. Arthur Kenrick in the chair, for the purpose of making certain alterations in the articles of association. The chairman said that article 104 gave each shareholder the right of examining the books of the company during the hours of business, and the directors felt that under present circumstances this was undesirable, as it was an easy matter for any opponent desirous of finding out what was being done by the company to secure a few shares and transfer them to someone else, who would then have the right of making an examination of the books and finding out who were Nettlefolds' best customers and which were the most advantageous markets. Hence the suggestion for altering article 104, in lieu of which it was proposed that a general balance-sheet (containing a summary of the estimated assets and estimated liabilities of the company, made up to a date not more than six months before the ordinary meeting, and arranged under convenient heads) should be made out every year and laid before the company in general meeting. It was also proposed that so much of the reserve fund as at the time of the next balance-sheet shall exceed 50,000*l.* need not be shown on the balance-sheet, but may be treated as an internal reserve fund. The directors need not give any information to the shareholders as to such excess, but should disclose the same to the auditors; and in future years additions might be made to the internal reserve fund without disclosure except to the auditors; but so that no addition shall be made without making the reserve fund shown by the balance-sheet up to 50,000*l.*, the directors would not be entitled to add anything to the external reserve fund until the internal reserve fund reached 50,000*l.* In conclusion, the chairman moved a resolution embodying the suggested alteration in the articles. Mr. Edward Nettlefold seconded the resolution, which was supported by Mr. R. Peyton, and carried. A further resolution, empowering the auditors to certify the correctness of the balance-sheet, independently of any part of the reserve funds, was likewise carried.

CORRESPONDENCE.

[We are not responsible for the opinions or the statements of our Correspondents. Letters intended for publication should be written on one side of the paper only.]

"OLD FRIENDS" IN SOUTH AUSTRALIA.

TO THE EDITOR OF "THE IRONMONGER."

SIR,—We have pleasure in acknowledging your courtesy in finding space for an illustration of our premises in your pages, and for your appreciative remarks. The photo was merely the work of a stroller, and, though we are pleased with the style and suitableness of the building for our business, we hardly expected it would be considered worthy of appearing in THE IRONMONGER. The writer has been a fairly constant reader of it since it started in 1859. He was then an apprentice in Stirling, and has continuously been at the trade up to the present, your pages having long been looked on as the letters from an old friend. We both read with great interest your articles urging ironmongers in various ways to make what some folks call a "forward movement," which we hope will be found satisfactory by those who try. We may just say that, judging from our experience, the trend of your writings is correct, and if followed by the right men will make the trade to them not merely profitable, but one of considerable enjoyment.

Wishing your journal continued success and usefulness,

Yours truly,

W. T. FLINT & SON.

48 Hindley Street, Adelaide, South Australia,
August 22.

OUR PRIZE COMPETITIONS.

TO THE EDITOR OF "THE IRONMONGER."

SIR,—I trust your efforts to fire the ambition and bring out the latent ability of young men in our trade will be well rewarded. I know that since the competitions were started much greater interest is taken in your valuable paper. This alone must have good results. My son, who sent in a design for a pair of gates, had just entered on his eighteenth year. Your prizes induced him to become a competitor, though he was by no means disappointed that he did not get one. In fact, he did not expect one. He is pleased at your recognition of his efforts, and, I should add, had no assistance—nor even a suggestion—in getting out his design. It was entirely his own work. These competitions will be the means of discovering a lot of unsuspected talent, and I regret that lack of time does not permit me to "go for" No. 14. With thanks, and wishing you all success. Yours truly,

Stroud, September 26. A. MILLER.

DESPATCH?

TO THE EDITOR OF "THE IRONMONGER."

SIR,—Promptness in executing orders is very important to one's business of to-day, and we are informed by the representatives of various firms that goods will be forwarded by return on receipt of order. But, alas! this is not the case in a great many instances. Days, weeks, and even months pass, but no goods to hand; postcards are repeatedly sent, and the usual reply received: "We hope to send your goods off to-morrow," or Wednesday, which appears to be a favourite day. May I give this as an instance? A well-bound and inclusive catalogue, containing variety to suit all requirements, is received by post. The terms, of course, are stated on a slip. Prices being favourable with other competitors, and subject to a selling discount, it is produced to the customer, and the order secured. The first question asked is,

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"How long will it take you to get it?" and the answer is, "Oh, within a week or ten days," or possibly a little longer—it all depends on the distance and the class of goods ordered. In the present case the time stated was two, or possibly three, weeks, this giving the manufacturer ample time to despatch. The customer leaves expecting, of course, to receive the goods at the time stated. The time approaches, a postcard is forwarded as a reminder, an encouraging reply is received. The time arrives for delivery, but no goods; a month passes, and still not to hand; a card is received stating, "Hope to send goods in a few days." A week passes, but the few days appear to be a little longer. The customer receives an encouraging reply every time he puts in an appearance (rather often), but at last he gets impatient and will stand it no longer, and cancels order. However, after a little friendly talk he consents to wait a little longer. A card is again received stating, "Your esteemed order leaves on Wednesday," but the question is which Wednesday? More weeks pass away, and it is then decided to cancel order, which would have been done long before in many cases; but, fearing it will be "getting out of the frying-pan into the fire," we wait patiently, and might have done so until now. "Order cancelled," is sent. By return of post a reply states, "Goods leave to-morrow (Wednesday) certain" (accent on the "certain"), and really on Saturday the desired goods arrived, being on order over three months! May that firm hope to receive another order! Is it not high time to remedy this kind of thing? If firms are unable to despatch at once, then why do not they say so, and not deceive one in this scandalous and unbusinesslike way? It is not only a disgrace to a well-known firm, but appears to the customer to show a lack of interest on the part of the ironmonger, and possibly a good customer is lost.

I maintain that all orders received, however small, should be treated as very important and receive strictest attention, an acknowledgment being sent per return on receipt of such. If delay is caused the ironmonger should be informed of the fact in a businesslike and straightforward manner; he is then able to deal with his customer accordingly.

Yours truly,

September 23. F. W. R. (24/19.)

BRISTOL INDUSTRIAL AND FINE ARTS EXHIBITION.

(SPECIAL.)

AMONG the most noticeable, and, to the readers of THE IRONMONGER, the most interesting exhibits at this exhibition now being held, are the following:—

Upon entering at the principal door, and turning to the left under the Gallery, we come to the exhibits of **Giles & Sons**, Bedminster, with samples of malleable iron, including a large number of nails and hooks for various purposes. **The Scottish Gas-stove Company**, High Holborn, London, and Eglington Street, Glasgow, have a good show of their gas cooking-stoves, including their patent gold medal "Darwin" gas-cooker (size 3) shown with "Portsmouth" automaton boiler, by which the water is quickly boiled whilst cooking in oven without extra consumption of gas. **The Iron & Marble Company**, 33 Victoria Street, and Thomas Street, Bristol, have a very well arranged stall, comprising kitchen-ranges, tiled registered grates, &c. Among their exhibits they show the "Salamander," a movable stove, mounted on wheels. It has a visible and continual fire, and has only to be filled once in twenty-fours with anthracite coal, or every twelve hours with coke; it can be adapted to any fireplace, and, with the aid of the smoke-stand purposely made for the "Salamander" and with smoke pipes, it can be placed in any room without a fireplace. **Webb, Aldridge, & Co.**, Bristol, iron merchants, present some very excellent samples of iron bent, or tied in a knot, cold. **The Kear Engineering and Cycle Company, Limited**, Redcross Street, Bristol, have a good exhibit of their various machines. **A. Marshall Hunt**, 14 Prince Street, Bristol, show a working model of their patent hoisting machinery, for mills, &c. **Sampson & Co.**, Patent Belt Works, Stroud, have a section of the largest belt in the world; width 75 in., length, 153½ feet. Also various beltings for general use. **The Daimler Motor Syndicate (Limited)**, 49 Leadenhall Street, London, show a launch fitted with their "Daimler" oil-engine; likewise a stationary engine. They also show a small make of their "Rapid" pump, for all kinds of purposes.

Mr. A. Cousins, sawmill furnisher, 303 Old Street, London, E.C., has a collection of his various and well-known machines. Among his novelties is "Heulbrook's patent tool-sharpener," which is an ordinary oil-stone, so arranged that the tool is held on a rest, while the stone travels backwards and forwards, so that any novice can put a fine edge on a tool of any kind. **Strachan & Henshaw**, Lewin's Mead, Bristol, have specimens of their work in shaftings, spur and bevel gearings, also a paper-bag making machine in motion. **John Hare & Co.**, Temple Gate, Bristol, show a section of a white-lead stack, and an improved mill in motion for grinding lead, putty, &c., by Torrance & Son, Bitton. **Mr. H. H. Bishop**, Victoria Pin Manufactory, Dursley, exhibit a pin-making machine at work; also a machine for filling the papers by sticking, in sheets. **Crossley Brothers (Limited)**, Openshaw, Manchester, and 142 Victoria Street, Bristol, have on view some of their well-known gas-engines, of from ½ to 25 nominal horse-power, the former for electric-light. **J. S. Willway & Sons**, St. Augustine's, Bristol, have a very well-arranged stall of electric brackets, pendants, &c.; also motor for driving ventilating-fans, &c.; likewise gas-stoves and various sanitary appliances. **Mr. T. J. Gardner**, 5 and 6 Pithay, Bristol, tool manufacturer, has a good assortment of various tools, including planes and fretwork-machines. **Mr. Edward H. Coulmin**, Wotton-under-Edge, Gloucester, engineer, has an assortment of various goods made in wrought iron—viz., floor and hanging lamps, brackets, a copy of the high-backed oak-chairs, in iron, the seat and back being covered in red leather; also an old iron chest of 15th-century work, with beautifully-made lock; Mockler's patent spring-cover, for covering drinks, preserves, &c., while in use; Diplock's patent wall-hooks for lath and plaster walls; and Wyatt's patent currycomb and scrapes combined. **F. W. Potter & Co.**, Phipp Street, Great Eastern Street, London, and 98 Victoria Street, Bristol, ventilating and electrical-engineers, have a good exhibit of their fans, wire-work, and wire-woven machine guards, and among other things, brass-plate engraving by special American machinery. **Mr. Hall**, Baldwin Street, Bath, gas-engineer, allots the whole of his space to showing the incandescent gas-light, being the sole agent of the Incandescent Gas-light Company for the neighbourhood. The exhibit is a large space, covered in, so that when the door is closed, the brilliancy of the light given by this system can be shown at any time, the room being tastefully arranged, with fireplace, carpeted, &c., showing the effect in an ordinary room. **C. E. Gurnsey**, 43 Marchant Street, Bristol, has a good show of the various ordinary lamps for gas, oil, and electricity; plain street-lamps, ornamental lamps for hotels, &c., and for various other purposes. **Niehus Brothers**, 40 Bridge Street, Bristol, have a small, but very well got-up stand, showing various specimens of tools, finished and in the "rough." **John Palmer & Sons**, 58 Queen's Road, Bristol, has the "Sandringham" afternoon table and trays, in art iron and copper, gongs, Alphine bells, musical tubes, &c. **H. White & Co.**, Pontymister Steel-works, Newport, Mon., show a pair of cast-steel box sections, movable tongue, and open joints, as supplied to the Bristol Tramway Company, and a large number of other steel castings, for which this firm is so well known. **James Stott & Co.**, 108½ Victoria Street, Bristol, exhibit specimens of their "Gold Medal" governor, and every description of appliance for automatic ventilation. **C. Wilson & Sons**, Leeds, London, and Paris, gas-apparatus manufacturers, have a large number of the "Wilson" patent gas cooking-stoves, and the "Wilson" kettle that will boil 1 gallon of water in ten minutes with 5 feet of gas. **King, Mindham & Co.**, Narrow Wine Street, Bristol, have a selection of electric-bells, telephones, motors, &c., and experiments every evening on cooking by electricity on a

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large scale. **The National Telephone Company (Limited)**, Oxford Court, Cannon Street, London, and 16 High Street, Bristol, also show telephones and general electrical apparatus, and a working telephone exchange, connected with the Company's Bristol and Clifton exchange system. **The Bristol Waggon and Carriage Works Company (Limited)**, Lawrence Hill, Bristol, have a good show of dog-carts, spring-carts, vans, &c. **Robbins & Co.**, Cumberland Road, Bristol, exhibit various specimens of bent timber, carriage-wheels, doors, windows, &c. **The Eagle Range and Foundry Company**, Catherine Street, Birmingham, and St. Augustine's Parade, Bristol, show their "Gold Medal" eagle range, fitted with hot-water circulating apparatus, for the supply of baths, lavatories, &c.; also their "Patent Gold Medal" eagle fire-grate, fitted with brass mouldings and tile panels. **T. Collins & Co.**, 106 Victoria Street, Bristol, have steam-ovens at work; hot-water apparatus, coils, pipes. &c. **Caddy & Co. (Limited)**, Daybrook Ironworks, Northampton, show Caddy's patent tubular chilled-face smoke-consuming fire bars, with rocking attachments. **Tilghman's Patent Sand-blast Company (Limited)**, Bellfield Works, Sheffield, have in operation Mathewson's patent sand-blast apparatus, for frosting, ornamenting, and lettering glass, stone, metals, &c. **H. & W. Thompson**, 98 Sherwood Street, Nottingham, show their patent automatic cask tilter, which can be fixed in a few seconds, and, being self-acting, they need no further attention. The tilt being very gradual, prevents the hops flowing to the tap, no fitting whatever required; also Selley's patent adjustable rack for looking-glasses, pictures, &c. **W. & B. Cowan**, Smith's Square, Westminster, have various gas-meters, index-testers, &c.

Proceeding up the stairs to the Gallery, we come to the exhibit of **S J. Keppel & Son**, Clare Street, Bristol. This firm maintain their reputation for art china and metal wares; they have a very tastefully-arranged show of their various goods, among which should be mentioned cut-glass, electros, and copies of old hammered brasswork in trays, coal-vases, cabinets, and various other forms, these goods being imported direct by this firm.

James Crispin & Sons, Nelson Street, Bristol, horticultural builders and heating engineers, have a model of an ornamental conservatory, specimens of hot-water boilers, coils, &c. **George Plumb & Co.**, Dolphin Street, Bristol, manufacturing cutlers, have among their exhibits novelties in sportsman's knives, penknives, scissors, &c. **Thomas Harris & Sons**, Wine Street, Bristol.—This enterprising firm have a large stand in the Gallery, in which they exhibit a large assortment of electric-fittings, having erected a dynamo for their own use. They have a large number of lamps always alight, giving a good effect, a great number and variety of artistic goods in metal, both iron and brass—viz., fenders, lamp-stands, kettle-stands, &c.—a bath fitted up with hot and cold water, an assortment of table-knives, &c.—in fact, all that pertains to ironmongery, in a well-arranged miniature shop, which does them great credit. This firm fitted up the fountain in the "Art" Department of the Exhibition. **Thorly, Son & Derrick**, St. Augustine's Parade, Bristol, art decorators, have a good show of wrought-iron work among their art fittings.

Many other stalls are of great interest, and would repay a visit to those interested in the trade. Among them must be mentioned the telephone-room, in which, in the evening, plays from the various theatres are being switched on from Birmingham and other parts. The stone-dressing machine is well worth a special visit, being a great saving of tiring labour.

Commercial Failures.—The number of failures in England and Wales gazetted during the week ending Sept. 23 was 98. The number in the corresponding week of 1892 was 77, showing an increase of 21, being a net increase in 1893, to date, of 264. We enumerate the failures amongst the following trades, and give the number in each in the corresponding week in 1892:—

	1893	1892
Building and timber trades	9	6
Coal and mining trades	2	2
Hardware and metal trades	3	2
Iron and steel trades	6	3
Jewellery and fancy trades	2	6

DOMESTIC HOT-WATER SUPPLY.—8.

By F. Dye, Author of "Hot-water Supply," "Hood on Warming Buildings," &c.

The Conversion of a Tank-apparatus to the Cylinder System.

THE particular advantage of the cylinder system, in its being devoid of danger if the water-supply fails, is sometimes of such importance that it becomes desirable to convert a tank-apparatus to this newer principle. As stated before, the cylinder system is such a desirable element of safety in a country residence (where the water-supply is dependent upon a hand-pump) that any conversation with the occupier upon this subject generally ends in an order being given to carry out the conversion, assuming a tank-apparatus exists. Many people living in towns, and whose residences are well and constantly supplied with water, are just as willing to pay for this alteration, simply for the satisfaction of knowing that it is a step nearer being absolutely safe. It is a good precaution, especially as the cost is reasonable, and it will be shown presently that the many explosions which occur in frosty weather are less due to ice in the pipes of the apparatus than to the failure of water at the cisterns, this being especially the case with protracted periods of frost as we have had.

If we suppose a tank-apparatus exists as in fig. 35, one method of converting it will be as in fig. 36. This, it will be

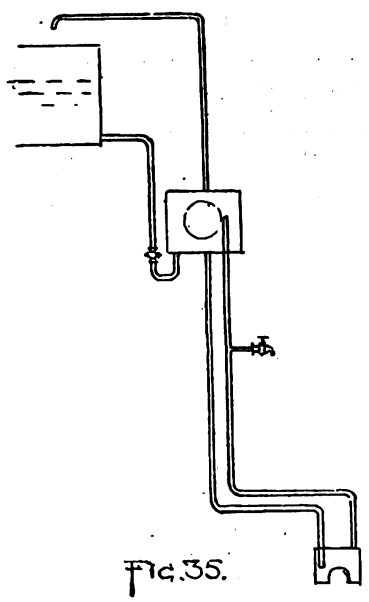

Fig. 35.

seen, entails: 1. The removal of the tank. 2. The connection of the cold-supply to the return-pipe, leaving out the syphon or dip here. The stop-cock can be left, but it is better to insert it down by the cylinder, as the workmen can then shut off the water to clean out the boiler, or put a new boiler in, for example, without traversing the house several times. The stop-cock must now be a full-way one, and be provided with a loose key as explained. 3. The flow-pipe must be connected with the expansion pipe, and this ends the alteration here.

At the lower extremity the pipes must be cut at the point that the cylinder is to occupy. 1. The portions from the boiler are then connected into the cylinder in the usual way, as shown. These pipes, which will now be called the primary flow and return, might be replaced with a larger size, as already recommended, except that this will necessitate dismantling the range, which may not be requisite otherwise. 2. The upper part of the flow-pipe is connected into the top of the cylinder and completes the expansion or

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rising main, as the draw-off services are already connected to it. 3. The upper part of the original return is connected into the bottom of the cylinder with full-way stop-cock and dip, and so constitutes and completes the cold-supply service. 4. The emptying-service has to be provided, but this

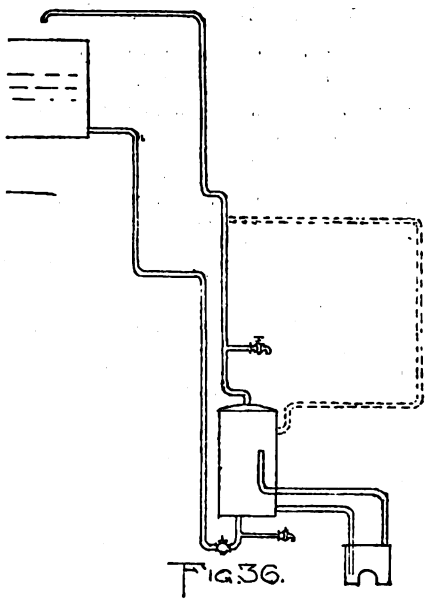

FIG. 36.

can be done in the most convenient way possible. If a draw-off service has existed at the mantel-jamb this can be considered an emptying-tap, provided the key is removed and kept in safe keeping. If this cannot be done, then a tap inserted in the cold-supply pipe will do, but it must, of course be on the cylinder-side of the stop-cock. It might be mentioned that if the draw-off at the mantel-jamb is changed

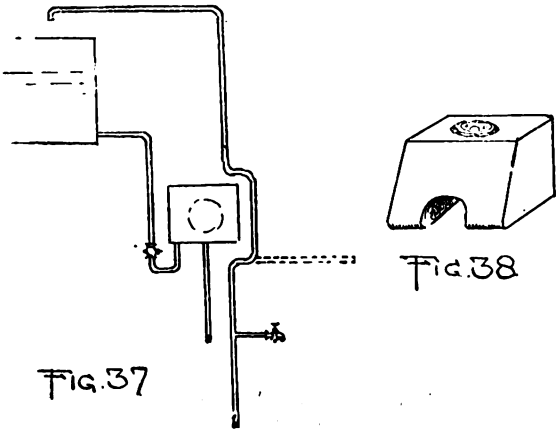

FIG. 37.

FIG. 38

into an emptying-service no inconvenience should be experienced. A jamb draw-off is quite unnecessary if there is a hot-water tap at the scullery-sink. No washing-up is done in the kitchen, and if there is a hot-tap there it is only used for improper purposes such as the filling of kettles and saucepans, &c. Kettles and saucepans should be filled with clear cold water, and to fill them from a circulating-apparatus is wrong, and the water is scarcely suited for drinking-purposes.

This conversion just described does not provide for any secondary-return service, and none can be arranged for from the existing pipes. If this service is desirable or necessary it must be a new one run as indicated by the dotted lines in the last illustration. It can either be a distinctly new service or the original return-pipe can be utilised. If this latter plan is adopted then the cold-supply service must be new and distinct. Either can be done, but in both cases one new service has to be introduced.

Fig. 37 illustrates another method, entailing a little less work, but losing by the non-removal of the tank, which might otherwise be allowed for and used in some other work (if in good condition). In this case it will be understood that the connections in the lower part of the apparatus are similar to the last, but at the upper extremity only the flow-pipe is varied, and the original cold-supply and original return are untouched. This practically converts the tank into an auxiliary cold-supply cistern or reservoir. It fulfils no good purpose beyond this, except some little saving of labour in disconnecting, &c.

The third method, and which has been already recommended when conditions make it desirable, is to convert to the semi-tank cylinder principle, illustrated at fig. 34 (Article VII.). This conversion would be the most simple and the most effective of all, only that the existing tank will be found to be too large. The addition of a cylinder would then be sufficient, perhaps, to bring about a failure, or a limited success at best. If it could be found or ascertained that the existing tank was really too small for the power of the boiler and the apparatus generally, then a small cylinder of, say, 20 gallons capacity, could be added. If not, then the tank must be taken out and replaced with a smaller one, and, as already stated, the tank and cylinder together must not hold more than one tank or cylinder would hold if used by itself

SIZE OF CYLINDERS.

This is another subject about which there is considerable difference of opinion, and which may be discussed with a deal of profit. A cylinder of incorrect size will destroy efficiency, notwithstanding the exact correctness of the erection in other respects. The same applies to the sizes of tanks in the tank-apparatus, so that the points about to be raised will apply to both.

In the first place, there exists a very common fallacy, and a most harmful one, that a "large cylinder is best, as it ensures a proportionately large supply of hot water." This practically credits the cylinder with heating the water, whereas it has no such power whatever. It has not infrequently happened that, with the idea that this notion is a correct one, a small or ordinary sized arch-flue boiler, as fig. 38, is fitted and connected to a 60-gallon cylinder with most miserable results. Most probably the remainder of the apparatus is quite limited as to size and extent, and which the small boiler would be capable of working, but the huge cylinder defeats its attempts. This 60-gallon size is not at all uncommon in moderate-sized works, but sometimes the idea is carried to even more serious extents, and 100-gallon cylinders or tanks are used.

This plan of utilising large cylinders with the mistaken notion of getting a greater supply of hot water is utterly wrong, and those who have good experience are leaning quite the other way, and using cylinders (and tanks) smaller than ever. A large cylinder, however it may be connected, entails a longer time in getting hot water when the fire is first lighted than is proper or agreeable. If after considerable time the contents are wholly hot of what use is such a bulk? Even if it was of use (which it is not after 9 A.M.) the want of hot water at an early hour, when baths are needed, is a serious drawback. Hot water is rarely, if ever, wanted in great quantity; a small quantity quickly replaced is much better in practice. A 30-gallon cylinder, due to the rapidity with which its contents are heated, will give the first bath at the earliest possible hour, and it will permit (for the same reason) of two more baths succeeding the first one; in other words, the contents of a small cylinder are quickly heated, and a 30-gallon size would give one bath of full quantity even if all the water was drawn from the hot-tap. While this first bath is in progress the contents of the cylinder will heat up for the next, and so on. The first bath would only take about 20 gallons at the utmost, so that a 30-gallon cylinder would not be entirely exhausted of hot water, and this would ensure there being warm water for the next. This is taking the worst aspect of the case, for if the first bath was not taken for one and a half hour after the fire was lighted the contents of this small cylinder would be scalding. This amounts to recommending a "little-and-often" plan, rather than a large quantity and having to wait

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for it. If it was not that the bathing was done at an early hour, and so soon after the fire is first lighted, then a large cylinder would work well; but, after all, there would not be any real gain for the extra expense the large size involves.

A rough-and-ready way of calculating the sizes of cylinders or tanks for moderate-sized works, and in which no special conditions exist, is to allow 10 gallons capacity for each tap. A very small apparatus with two taps might perhaps have a 25-gallon reservoir, but for three taps 30 gallons is ample; four taps, 40 gallons; five taps, 50 gallons. After this the increase should be a little less—say, six taps, 55 gallons; seven or eight taps, 60 gallons. The boilers must of course bear some relation to the figures, as regards their power or efficacy. These will be dealt with in the next paper.

SOME POINTS IN PLUMBING-WORK.—5.

(BY A WELL-KNOWN EXPERT.)

THERE are so many points, old and new, that one is puzzled in selecting the most useful to elucidate. Water-closet soil-pipes were a few years ago frequently, and are even yet sometimes, formed of common light cast-iron rainwater-pipes, jointed with putty or white-lead in very unsuitable shallow sockets. We are all aware now that such poor material should not be used, but the difficulty we experience when we meet this "jerry" work is to convince the householder that he should have it removed. You can tell him, first, that these light cast-iron pipes are liable to crack and split in frost, especially if a slight leakage or overflow of water is passing down them, and you will probably be able by sounding with a hammer, or by the smoke-test, or by the water-test, to prove that this has actually occurred. You can explain that the interior is rough and coated with foul deposit and iron rust combined; you can show that the sockets are so small and fragile that proper joints cannot be made with gaskin and molten lead because there is not sufficient space in the sockets, and because you would certainly split the socket in caulking home the gaskin-and-lead joints. You can explain that if you make a careful putty or red-lead joint, though it may be secure for a few months, yet that the combined action of sun, heat, and frost must expand and contract the light iron pipes and sockets, and dry up the putty joint so that cracks must develope and leakage must eventuate; that the danger from such leakages of foul air is greatest at points where the leaking joints pass close by bedroom-windows, through which the escaping foul air is drawn into the room; and you can point that the important connection between the lead branch soil-pipe of the closet-apparatus, and the light iron soil-pipe cannot under any circumstances be securely effected.

Wherever you find a light iron soil-pipe (in wide experience you will find hundreds of them) passing down inside house-walls and through pantries and larders, you must, if you value your reputation, remove them and provide suitable soil-pipes outside house-walls if possible; but, if circumstances compel you to place the soil-pipes inside, then give all your attention to make them absolutely secure.

For internal soil-pipes heavy-coated or glass-lined cast iron, jointed with gaskin and molten lead, well caulked home, is the safest. Heavy-drawn lead soil-pipes in such position may be approved, jointed with perfectly-formed wiped joints and supported with skilful care, but there is always the danger that a careless person may, as time passes by, drive a nail into or otherwise injure a lead soil-pipe; and there is a further danger, not at all uncommon, that a housemaid's slop-sink may be branched into this soil-pipe, down which very hot water may be thrown, and under such circumstances no lead soil-pipe is safe. The sudden expansion and contraction of the lead will eventually injure the pipe, cause it to drag down from its supports, and to leak into the house, and, furthermore, rats have been known to gnaw holes in lead pipes. If a soil-pipe must pass down through the house instead of outside, two other points need attention. Carry the cast-iron soil-pipe at the foot to the outside of house-walls, and do not connect it to an earthenware drain inside the house-wall at the foot of the stack. The joint between earthenware and iron is not of such a character, even when well made, as to be implicitly relied upon inside a house. If any defect occurs, the foul air will have access to the house freely, and will travel up in the soil-pipe wall-chase or casing to the upper bedroom floors.

Let the internal soil-pipe also be extended always full bore to a point above the roof for ventilation, and, if this cannot be done, then give up the job. Never fix a soil-pipe or closet inside a house in a position where proper ventilation is impossible. No skilled plumber will terminate his soil-pipe vent-shaft near any window or near any chimney, lest the foul air be drawn into the house; yet we see hundreds of such mistakes every day that we come to our business in London when we gaze from our railway-carriage window. No skilled plumber will connect lead soil-pipes direct to iron soil-pipes. He will use a copper or brass ferrule, carry the lead soil-pipe through the ferrule without reducing the bore of the lead pipe, turn the edge of the lead pipe over the lower end of the ferrule, then wipe a solder joint between the top of the ferrule and the lead pipe, slip the ferrule into the iron soil-pipe socket, pack it with tarred gaskin, joint with molten lead, and hammer home. The joints on branch soil-pipes ought not to be hidden in the thickness of the wall; every joint should be exposed and accessible for inspection.

The sizes of soil-pipes now generally adopted are 3½ inches and 4 inches diameter, seldom larger. All soil-pipes, whether iron or lead, require to be rigidly supported; the supports of lead soil-pipes must be soldered securely to the pipe itself. The soil-pipe should always enter the drain at its foot vertically or diagonally, never in a horizontal direction, and flanges should be attached securely to the foot of the soil-pipe to enable the cement to grip and hold. Branches should never enter the vertical soil-pipes at right angles; they should be formed, whether iron or lead, with a curve, splayed so as to allow the soil to pass with even motion into the soil-pipe, which should in every part of its interior present a smooth surface without the smallest projection to arrest or obstruct the passage of soil, paper, &c.

Some authorities favour the practice of cutting off every ventilating soil-pipe from the drain and from every other soil-pipe in the house by placing a disconnecting-trap at foot of each soil-pipe, having an open grating between the trap and the ventilated pipe to admit fresh air. It is, doubtless, a lessening of risk in one direction to exclude all house-drain air from the soil-pipe, as we insist on excluding all sewer-air from the house-drain. But other risks are created. For instance, the traps with open gratings may become stopped by frost; the gratings may become stopped by snow or by dirt-accumulation; the trap forms an obstruction to the free passage of soil and paper, perhaps needing a second good flush of water to clear it away; and if the closet is seldom used the soil may remain in the trap long enough to decompose and be dangerous. Again, the trap at the foot of the soil-pipe checks the force of the flush and lessens its useful effect in flushing out the house-drain and the main interceptor-trap; you also lose the soil-pipes as ventilating-shafts for the drain, and it becomes necessary to fix as many additional independent vent-shafts up the walls to the highest points above roof as there are branches to the drain, at additional expense. Another serious objection is that the open gratings, intended to admit fresh air at foot of soil-pipes, will emit foul air from the soil-pipe every time the closet is flushed. Frequently this air is offensive if soil has remained long in the trap, and to anyone standing over the grating it may prove injurious also. Sometimes these gratings and traps must be fixed near a passage-door or a window, and thus the offensive odours may be drawn directly into the house, and then the householder generally takes the law into his own hands and closes the gratings, destroying thus the ventilation of the soil-pipe.

Mica flap-valves are sometimes suggested as a method of preventing this back-flow of foul air, but such valves are liable to get out of order, and generally fail to accomplish the good intentions of the plumber, especially if placed in small confined areas or yards. If the house-drain is perfectly laid, with smooth interior and good fall, well flushed, disconnected perfectly from the sewer, with access provided for inspection, the soil-pipes also being smooth internally and skilfully fixed, all the high-level soil-pipes may be connected direct to the drain, as main vent-shafts for the system, and the soil and flushing-water then flows unobstructed to the drain

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and right away. The rainwater-pipes should never be used to ventilate drains, either as inlets or outlets. Every rain-pipe should deliver visibly over a gulley trap and grating provided. The waste-pipes from baths and lavatory-basins should be also delivered under a grating and over the water-trap of a disconnecting receiver, skilfully arranged on the drain, the wastes ventilated full-bore at top and bottom, and a drawn-lead trap always fixed close up to the waste-gratings of the baths and basins. Many of these fixtures are found without a trap underneath them, on the plea that, as they deliver in open air, a trap is not required; but the result follows that the air flowing through the dirty waste-pipe into the room fills it with the disagreeable odour of putrifying soap, grease, &c. Pantry-troughs and scullery-troughs are best fitted with waste-pipes led (well-ventilated) into grease-traps in open air. Grease-traps with automatic syphon flush-tanks to wash them clean four times a day are the best where flushing-water is available, otherwise Dean's grease-traps, with lifters to remove grease daily, may be safely adopted.

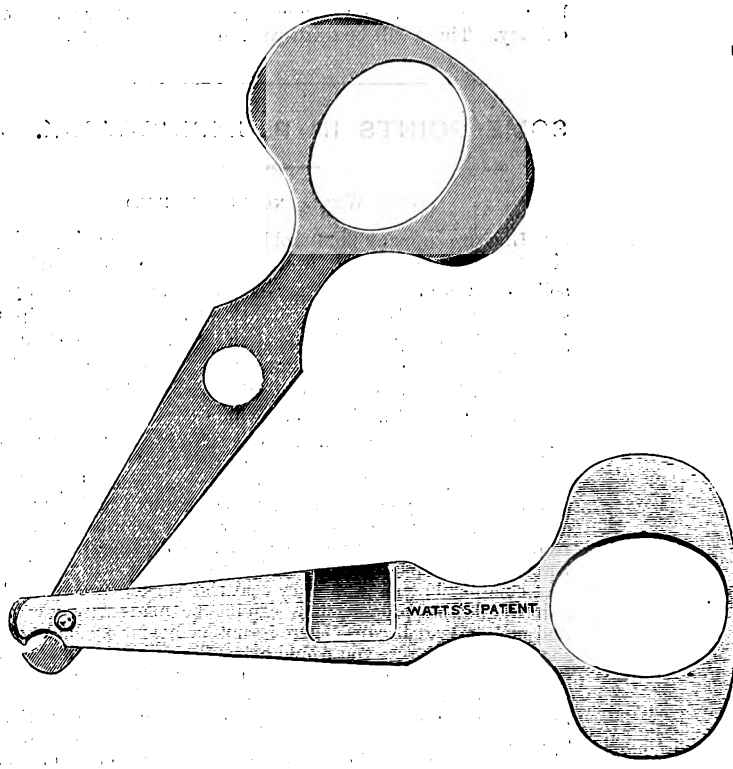
All wastes should have drawn-lead traps, with brass cleaning-screws, fixed close up to the fittings; where hot water is used lead traps and pipes should be extra heavy and extra well supported and fastened. Iron pipes, glass-lined or galvanised, will be found most secure and durable where hot and cold waters pass alternately. The waste-pipes and traps should not be larger than needful, and the brass grating should be of such enlarged open area as to admit more than sufficient flow of waste water to fill the waste-pipe and cleanse it with every flush. All overflows of baths, basins, troughs, cisterns, &c., should be large enough to carry away the entire overflow easily when every tap supplying the fitting is running full bore. This is a point constantly overlooked by potters, &c., in making such fittings. The plumber must, if necessary, supplement the overflow in any fitting he fixes if it be found insufficient in practice. Overflows should be safely discharged and trapped. Watern-cistern overflows should all deliver in the purest open air, and be fitted with copper flap-valves, to exclude cold air, in preference to traps, which generally run dry or choke up and so become useless.

Lead safe-traps under closets, sinks, baths, &c., should never be connected to waste or soil pipes, but should invariably be carried out direct to open air, and fitted with copper flap-valves to prevent cold air flowing in under closet-seats. Hundreds of these waste-pipes in England are dangerously connected direct to soil-pipes, in some cases into the closet-traps, and in other cases provided with traps of their own, which are quickly emptied of their water-seal, and are accountable for many lost lives, though not suspected as dangerous. Attempts to keep these traps charged by small jets of water from weeping pipes are generally futile, the jets speedily becoming choked and ceasing to act. The outgo bend of all traps should also be fully guarded from syphonage by independent sufficient ventilating pipes. While considering this portion of plumbing-work, if one asks why ventilation is so prominently urged in connection with drains, soil and waste pipes, you may give shortly a few good reasons. The air in such pipes, if sealed during use, is not good or pure, and if allowed to remain becomes a dangerous concentrated gas which will expand and force its way through the trap-seals into the house, and also attack and corrode the pipes themselves; therefore it is necessary to relieve the pipes from the pressure of the expanding gases, to remove these gases speedily, and to substitute pure air by simple automatic means. It is also found that sealed soil and waste pipes act as powerful syphons when flushed, emptying any traps upon them of their water seals by syphonic action, and exposing the residents of the house to danger. Why, then, would not a small pipe, say, $\frac{1}{4}$ inch diameter, answer the purpose, instead of carrying up a 4-inch soil-pipe full bore? If you can make the calculation of the areas of $\frac{1}{4}$-inch and 4-inch pipes, and the relative friction retarding currents of air through each, you will find that one 4-inch pipe, 40 feet long, will pass more air than one hundred $\frac{1}{4}$-inch pipes. Pure air in abundance alone is needed to ensure purity in the interior of well-formed drains and soil and waste pipes, and where you can succeed by such simple means in securing abundance of pure air through your pipes, and in removing all that is foul and dangerous, it becomes a crime for plumbers or householders to neglect or lessen these benefits.

NOVELTIES.

COMBINATION RAILWAY-CARRIAGE KEY AND WIRE-CUTTER.

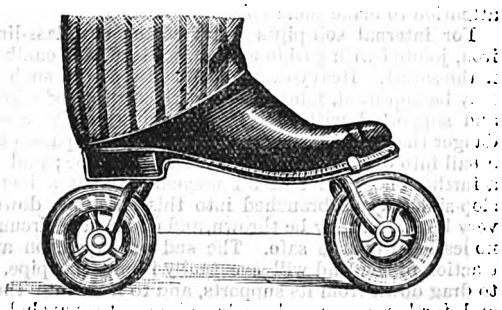
MR. JOHN WATTS, Lambert Street, Sheffield, has patented a combination railway-carriage key, cigar-cutter, and wire-cutter, as seen in the appended illustration. The article is made of best cast steel, nickel-plated. When closed it takes the form of a railway-carriage key, in which shape it occupies



very little room, and can be conveniently carried in the waistcoat-pocket. The wire-cutter is formed at the end and the cigar-cutter in the centre of the handle. The article should prove of service to commercial travellers and others who have to travel frequently by train, and are liable to find themselves locked in at a critical moment.

PNEUMATIC ROAD-SKATES.

WE illustrate in the annexed woodcut a novelty in roller-skates for use on the high road, reference to which was made



in a "Chat" paragraph in our last issue. These skates are arranged to clamp or strap on to the soles of the boots like ordinary skates, but the rollers are built after the manner of bicycle-wheels, and are fitted with pneumatic tyres. It is stated that these skates meet all the requirements of road-travel-

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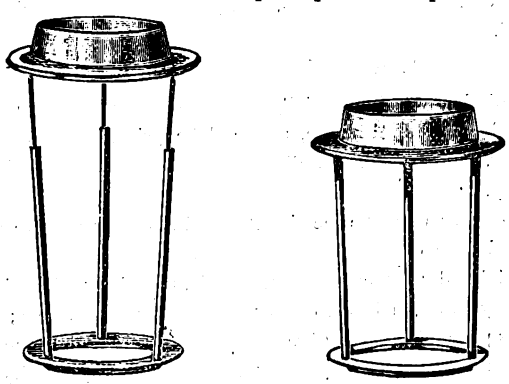
ling hills being very easily surmounted and descended, while the rough places are rendered smooth by the resiliency of the tyre. The rollers are fitted with ball-bearings, and run noiselessly, while the speed attained is said to be about equal to that of a cycle. The rollers are 3½ inches in diameter, the tyres 2 inches, and the average weight is 2¾ lbs. each skate. The patentees are sanguine that this method of locomotion will supersede cycling as a pastime, the exercise being very beneficial to health, and the movement exceedingly rapid. The first cost is naturally much less than that of a cycle, whilst the skates are more easily and cheaply repaired when damaged. Further particulars may be obtained from the patentees and makers, J. H. Wilson & Co., 9–13 High Street, Kirkcaldy, N.B.

ADJUSTABLE LAMP-SHADE HOLDER

USERS of lamps often require to concentrate the light for a time when engaged upon some special work or occupation, but so far as we are aware no simple device has hitherto been available for the purpose in connection with oil-lamps. An invention which seems to "fill the bill" has, however, been worked out by J. J. Thomas & Co., Edgware Road, W., and, as it is offered at a reasonable price, promises to prove a real



boon to all lamp-users. The end in view has been attained simply by making the shade-holder telescopic, the three upright tubes, which are shown in the drawing, being arranged to receive the three wires which support the top of the holder. These wires reach to nearly the bottom of the tubes, so that a considerable range of adjustment is provided for. The raising or lowering of a shade can be accomplished at pleasure by anyone, and as it enables the rays of light to be diffused over a large area, as well as concentrated upon a small spot, the utility of the device for hall and pedestal as well as for table lamps is obvious.

TRADE MARKS.

SUBJOINED is the official list of applications, published up to Sept. 20, for the registration of trade marks, with description of goods and numbers of the applications, so far as the iron, steel, hardware, and allied trades are concerned. It must be noted that any person who has good grounds of objection to any of these marks may, within one month of the above-named date, give notice in duplicate at the Patent Office (25 Southampton Buildings, W.C.), in the form "J" in the Second Schedule to the Trade Marks Rules, of opposition to such registration.

ZEBRA Thomas Hilton, Moss Side Works, Great Western Street, Manchester, Lancashire. Woven-wire and spring mattresses. 174,475.

Société du Moika, 59, Boulevard de Strasbourg, Paris, France. A liquid preparation for removing paint, included in Class 47. 172,133.

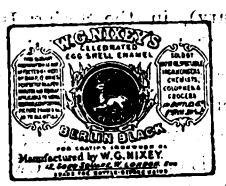
Adolph Zalkin Germains and Siemon Friedlander, trading as Germains, Friedlander & Co., 57 Moor Lane, London, E.C. A smoke-consumer for attachment to glass lamp-chimneys, being a glass article included within Class 15. 173,963.

Ebenezer Boyes, Albert Road, Peckham, Surrey. Tea, coffee, and such like pots made wholly or principally of ordinary metal. 174,395.

DIGATOR Thomas Herbert Griffiths, 31 Park Terrace, Regent's Park, London. Main-service regulators for gas and water. 174,692.

SUBJOINED is the official list of applications, published up to Sept. 27, for the registration of trade marks, with description of goods and numbers of the applications, so far as the iron, steel, hardware, and allied trades are concerned. It must be noted that any person who has good grounds of objection to any of these marks may, within one month of the above-named date, give notice in duplicate at the Patent Office (25 Southampton Buildings, W.C.), in the form "J" in the Second Schedule to the Trade Marks Rules, of opposition to such registration.

Arthur Ford Lloyd, 5 Hunter Street, Brunswick Square, London, W.C. Electric batteries, not for medical purposes. 169,935.



The firm, trading as William George Nixey, 12 Soho Square, London, W. Berlin black for grates and stoves. 173,305.

TACSENE John Alfred Morris, trading as Jno. S. Morris & Son, Victoria Bridge Works, Chapel Street, Salford. A boiler-composition, being a chemical preparation included in Class 1. 174,021.

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KERASHA. Henry Alexander Cole, 1 Rumford Place, Liverpool. Packing and hose of all kinds. 174,113.

VAUXHALL Alexander Wilson & Co. (Lim.), Vauxhall Ironworks, Wandsworth Road, London. Pumps. 174,233.

Walter Willson Cobbett, 82 Southwark Street, London. Hair belting. 174,372.

George James Williams 46 Curtain Road, Shoreditch, London. Bicycles, tricycles, and other velocipedes. 174,701.

"NEBO" Henry Sharp and John Sharp, trading as H. Sharp & Son, Bourn Works, Burley Road, Leeds. Polishing-paste for polishing stoves and grates, also bright metals and glass; polishing-powder and polishing-liquids for bright metals and glass; knife-polishing powder; blackLead for polishing; plate-powder; blacking; and polishing-soap for pots, metal, marble, and glass articles. 174,729.

BOMEROY Victor Witte, 4 Newgate Street, London, E.C. Sewing-machines. 174,814.

KELA Victor Witte, 4 Newgate Street, London, E.C. Sewing-machines. 174,815.

FORTUNAR Keats Brothers & Co., Albion Works, Stafford. Boot and shoe sole sewing-machines. 174,922.

Trade Marks and Brands.—Four times in each year we publish a List of Trade Marks and Brands—namely, in the Merchant Shippers' Issue (January), in the Spring Issue (March), in the Autumn Issue (September), and in the Annual Diary. The list is printed on tinted paper, and the marks are carefully classified under various headings, so as to facilitate reference by buyers. The charge for inserting each Mark in all four of the above issues is only 30*s.* net. Owners of any of the Marks appearing in the above List would do well to order them for insertion in the Four Issues mentioned, and in that case there will be no necessity for them going to the expense of having a block engraved, as the one shown can be used Free of Charge. Specimen pages and full particulars will be forwarded on application to the Publisher, 42 Cannon Street, London, E.C.

THE IRONMONGER DIARY, 1894.

THIS valuable work, which is more highly appreciated and more largely circulated each succeeding year, is now in course of preparation. The work must go to press within the next few weeks (although it is not issued to home subscribers until towards the end of the year), owing to the large number of copies to be printed, the time required for binding, and the fact that the Australian, New Zealand, South African, Indian, South American, West Indian, &c., copies must be posted in time to reach those parts of the world before the end of the year.

The literary matter in the 1894 Diary will be of high value and importance for reference purposes. The work is in constant use, not only in Great Britain, but wherever British hardware, &c., goods are sold, bought, or used.

Trade Marks and Brands.

This list will be specially and carefully classified under suitable heads, as before, and will be printed on coloured paper, so as to make it a distinct and separate section of the Diary.

In order to make the list thoroughly comprehensive and useful alike to small firms as well as to the larger houses, special and uniform spaces are made, the charge for which is very low and in all cases the same for each space; but firms possessing several brands or marks may have as many separate spaces as they may think fit to occupy, specifying when giving their instructions the various heads under which the marks are to appear.

This section of the Diary is strictly confined to the insertion of trade marks or brands, with just sufficient letterpress to indicate names and addresses and the articles to which the marks or brands are applied. Ordinary trade advertisements are excluded from this particular section, but are inserted elsewhere in the Diary at our usual tariff.

We have ample proof that this list of marks and brands is found of immense service to buyers at home and abroad, especially in the Colonies, inasmuch as inquiries are constantly being addressed to us asking for the kind of information which this list affords.

Every information respecting the Diary may be obtained on application to the Publisher, 42 Cannon Street, E.C.

The Proposed Coal Trust Meeting will probably be held in London next month, when the scheme will be criticised in detail.

Make and Shipment of Tinplates.—The Swansea Harbour Trustees have furnished the following official return of tinplates received from the makers' works, shipped, and held in stock:—

—	Week ending Sept. 23, 1893	Last Week	Corresponding Week Last Year
	Boxes	Boxes	Boxes
Received	56,000	44,009	65 642
Shipped	25,415	45 554	62,358
In stock	275,158	243,573	177,675

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CONTRACTS OPEN.

October 2.—Cooking and heating apparatus for Glin District School, Limerick. Particulars from Leahy & Hartigan, Newcastle West.

October 2.—Margam Local Board require 1,000 yards of 3-inch cast-iron pipe, and 250 yards 1-inch galvanised pipe. Particulars from the Surveyor, Taibach, Port Talbot.

October 3.—Hydrants and fire-mains for Belfast Workhouse. Particulars of Young & Mackenzie, Engineers, Belfast.

October 4.—Supply of highway-tools and ironwork for sewers for Plumstead Board of Works. Particulars at the Offices, Woodstock Road, Lee.

October 5.—The Bengal and North-Western Railway Company require four 8-inch centre screw-cutting lathes. Specification, on payment of 10s., at 237 Gresham House, E.C.

October 5.—Supply of a vertical boiler (new or second-hand), sewer pipes, &c., and small pumping plant for sewage works, for the Ince-in-Makerfield Local Board. Particulars from Mr. R. Winstanley, 28 Deansgate, Manchester, or Board Offices, Ince.

October 7.—Supply of cast-iron pipes to Chelmsford Town. Particulars of the Surveyor.

October 9.—Lancashire and Yorkshire Railway Company require stores for the 12 months ending October 31. Particulars at the Stores Department, Osborne Street, Manchester.

October 10.—About 2½ miles of 3-inch and 4-inch water mains for Parbold, Wigan. Particulars of Heaton & Ralph, King Street, Wigan.

October 11.—Iron bridge over the L. and Y. Railway for Bolton Corporation. Particulars, on deposit of 2*l.* 2*s*, from the Borough Surveyor.

October 23.—Corrugated-iron cargo-shed for Torquay Corporation. Particulars from the Engineer, Town Hall, Torquay.

October 27.—Blackburn Corporation require machinery and plant for electric lighting, viz.—(1) steam boilers and accessories; (2) steam dynamos and accessories; (3) travelling-cranes; (4) cables; (5) conduits; (6) accumulators; (7) switchboards, &c. Particulars, on deposit of 3*l.* 3*s.* for each section, from the Town Clerk, Blackburn.

December 1.—Morley Corporation invite schemes for lighting the town by electricity. Conditions from the Town Clerk.

December 1.—Flintshire County Council offer a premium of 100*l.* for the best design for a movable bridge over the Dee at Queen's Ferry. Particulars, on deposit of 21*s.*, from the Clerk, Mold.

Date not Stated.—Heating of New School for Kirkcaldy School Board. Particulars from R. M. Cameron, 24 George Street, Edinburgh.

Date not Stated.—For supplying and fixing 280 yards vertical spiked iron railing, 4 feet 6 inches high, ¾-inch thick, 4 inch between, gate to match; 63 yards for fixing in stone coping, other in ground. For information apply to Mr. William Wiggham, Easington, Castle Eden.

Date not Stated.—The Great Western Railway Company require about 180 tons of wrought-iron and steel girder-work for bridges. Plans, specification, and bills of quantities at the office of the Engineer, Paddington Station.

RESULT OF TENDER.

Stoke-upon-Trent.—For providing and fixing the ironwork, comprising cast-iron girders, cantilevers, railings, &c., required for completing the Trent Bridge Improvement, Stoke-upon-Trent:—Dean & Lowe, Stoke-upon-Trent (accepted), 306*l.* 10*s.* 7*d.*; Kerr, Stuart & Co., 310*l.*; Renshaw, Cliffvale Works, Etruria, 345*l.*; Woodhouse, Rawson, & Co., Kidsgrove, 395*l.*

FOREIGN CONTRACTS OPEN.

October 4.—Supply of postal-vans for the Postal Department, Düsseldorf. Particulars from the Direction.

October 4.—Three loco-turntables for the lines Lichtenberg-Friedrichsfelde, and Alt Damm, and Königsberg in Prussia. Particulars and drawings of the whole, 4m. 50pf., from the Kgl. Eisenbahn-Direction, Bromberg.

October 5.—Supply of 8,000 metal cans to the Roumanian War Office. Particulars at Bucharest, and the Commercial Museum, Brussels.

October 5.—Supply of 190 tons of welding iron, and 19 tons of cast iron, for the construction of a loco-workshop. Particulars from the Prussian Railway Department, Harburg.

October 5.—The Minister of Public Works, Rome, requires (1) steel angle fish-plates and iron plates; (2) iron bolts and cramps.

October 6—Supply of 25 tons of copper to the Royal Foundry, Turin. Particulars from the director.

October 9.—Supply of 50,000 lbs. of lead to the Copenhagen Gasworks, Copenhagen. Particulars from the Manager.

October 10.—Supply of colza and petroleum oil for the service of the Post-office Department, at Berlin. Particulars on application.

October 10.—For the Austrian State Railways there are required, during 1894, copper-plates for loco-fireboxes, crucible and Martin steel axles, crucible-steel tyres and boiler-tubes. Particulars from the K. K. General Direction, Vienna.

October 20.—The Commissioners for regulating the navigation of the Guadalquiver and the port of Seville require five dredgers. Particulars from the Offices, Seville.

October 23.—Construction of 3 metallic bridges in place of masonry structures at Louvain. Particulars from the Ingénieur des Ponts et Chaussées, Rue Marie-Thérèse 102, Louvain.

October 31.—Mr. N. J. Psiachi, Contractor, Cairo, invites tenders for the electric-lighting of some buildings with about 1,500 glow-lamps of 10 c.p., and 12 arc-lamps of 350 c.p.

THE "GAZETTE."

PARTNERSHIPS DISSOLVED.

Boothman, S., and Keys, W., under the style of Boothman & Keys, Tooting Graveney, builders, plumbers, decorators, and sanitary engineers.

Goulding, G., and Ketton, F. M., Nottingham, cycle-makers and hub-manufacturers.

Newton, J., and Savage, G. C., under the style of Newton & Savage, Tysoe Street, Clerkenwell, E.C., electricians and electrical bellhangers.

White, W., Hill. J., White, W. F., White, A. B., and Dance, E., under the style of John Aston & Co., Birmingham, button manufacturers; so far as regards J. Hill.

THE BANKRUPTCY ACTS, 1883 AND 1890.

RECEIVING ORDERS.

Bottoms, Thomas, Aston, Warwickshire, cycle manufacturer.

Day & Co., Bath, engineers.

Day, Joseph, and Young, Jules D. (carrying on business as Day & Co.), Cannon Street, E.C., and Bath, mechanical engineers.

Kirby, Henry, St. Leonards, ironmonger.

ADJUDICATIONS.

Aldcroft, Richard, Patricroft, Lancashire, engineer and brassfounder.

Barnes, Tom, Boscombe, Bournemouth, plumber.

Bottoms, Thomas, Aston, Warwickshire, cycle-manufacturer.

Kirby, Henry, St. Leonards-on-Sea, ironmonger.

Manico, Edward C., Metal Exchange Buildings, E.C., late Sheffield, cutlery-manufacturer.

Robinson, Robert H., Salisbury, cycle-maker.

Stone, John H., Maidstone, blacksmith, late licensed victualler.

DEEDS OF ARRANGEMENT.

Blood, Robert William, Institute Works, Howard Street, and Elvetham Road, Birmingham, stamper and piercer. Trustee—Henry Eagles, 25 Temple Street, Birmingham, accountant, with a committee of inspection. Dated September 9, 1893. Filed September 16, 1893. Unsecured liabilities, 2,137*l.*; estimated net assets, 2,000*l.*; creditors fully secured, 3,412*l.*

Smith, H., & Son (Henry and William H. Smith, trading as) 11 Market Place, Malton, and at George Street, Driffield, timber merchants, ironmongers, auctioneers, and commission-agents. Trustee—Thomas F. Judge, 8 Parliament Street, Hull, chartered accountant. Dated September 12, 1893. Filed September 18, 1893. Unsecured liabilities, 906*l.* 11*s.* 11*d.*; estimated net assets, 385*l.*; creditors fully secured, 15*l.*

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THE AMERICAN MARKETS.

[*Special Despatches by Anglo-American Cable:— From our own Correspondent.*]

NEW YORK, September 28

THE dilatory and uncertain action in the Senate with regard to the Silver Repeal Bill, combined with the threats of a renewal of the export of gold, has been causing great uneasiness in all branches of the iron and steel trades. Since Friday last it has been practically impossible to sell commercial paper to any of the New York banks. Transactions have been small for immediate consumption, and sellers are anxious to dispose of stock at the prices dictated by individual conditions, and quite independently of the official quotations. While some works are recommencing business, others, such as the Cambria Iron Company, are shutting down again.

The Pig-iron Market has been inactive, with no change in quotations.

Plates, although unchanged officially, have been weak, with a declining tendency.

Steel Rails are still quoted at $29 per ton, but some private sales under this figure are said to have been booked to-day.

Mill Billets are quoted below last week's figures. This is due to a decline during the latter part of last week, but to-day the feeling is reported stronger.

In Structural Materials no change of note has taken place.

Scrap Iron, although nominally strong, appears to have been selling below the official figures, and the market generally shows a downward tendency. Old iron rails are officially quoted at from $14.50 to $15, but sales are said to have been made at as low as $13, while steel, which is nominally $12.50, has been sold at $8. No. 1 scrap rules officially at $11 to $12, but business has been done at $10.

In Tinplates ordinary cokes have been in fair demand at firm prices, but otherwise the market has been dull. Charcoal terne, Dean grade, is now quoted $5.30 to $5.35.

FORTHCOMING EVENTS.

NEXT WEEK.

Iron Trade Change Meetings:—London Metal Exchange, daily, 12.30 P.M. to 1 P.M. and 3.30 P.M. to 4 P.M. Middlesborough, Tuesday. Wolverhampton, Wednesday. Birmingham, Thursday. Glasgow, daily, 11 A.M. to 12 NOON, and 2 P.M. to 3 P.M.; no market on Saturday, Manchester, Tuesday and Friday, 1.30 P.M. to 3 P.M. Liverpool, daily, from 12 NOON to 12.30 P.M., and 3 P.M. to 3.30 P.M. Newport, Wednesday, from 1 P.M. to 2 P.M. Cardiff, daily. Swansea, Tuesday, 2 P.M. to 3 P.M.

Society of Engineers.—Ordinary meeting. Paper on "Gas-substitutes," by Professor Vivian B. Lewes, F.I.C. Town Hall, Westminster, October 2, at 7.30 P.M.

Hull and District Institution of Engineers and Naval Architects.—First general meeting of the session. Paper on "Boiler-furnaces: their Construction and Renewal," by Mr. A. V. Coster. Parochial Offices, Bond Street, Hull, October 2, at 8 P.M.

The Junior Engineering Society.—General meeting for election of officers, and other business. Westminster Palace Hotel, Victoria Street, S.W., October 6, at 7.30 P.M.

(Secretaries of Societies and others are requested to give the Editor early information as to forthcoming meetings, &c., for notification in this column.)

MONEY MARKET.

LONDON, Friday Morning.

THE Bank of England rate of discount remains at 3½ per cent. The feature has been the stronger demand for loans for the day, for which the charge has advanced from ¾ per cent. to 1 per cent., the quotation being 1¾ to 2 per cent. The weekly return of the Bank of England shows that the proportion of reserve to liabilities has improved ⅜, to 54¼ per cent.

Home Government securities have remained very steady, a few purchases for investment continuing to be made. Consols were last quoted at 98⅛ for both money and the account.

The following was the course of exchange last evening:—

Amsterdam and Rotterdam, 12 1 to 12 2	**Austria, three months, 12 75 to 12 77½**
Ditto, three months, 12 4 to 12 4½	**Marseilles, ditto, 25 41¼ to 25 46¼**
Antwerp and Brussels, ditto, 25 46¼ to 25 51¼	**St. Petersburg, ditto, 24 7/16 to 24 9/16**
Hamburg, 20 62 to 20 66	**Genoa, ditto, 28 45 to 28 50**
Berlin and German Bank Places, 20 62 to 20 66	**Madrid, ditto, 38⅜ to 38¾**
Paris, cheques, 25 22½ to 25 27½	**Lisbon, ditto, 40½ to 40¾**
Ditto, three months, 25 40 to 25 45	**Copenhagen, ditto, 18 37 to 18 41**
	Christiania, ditto, 18 38 to 18 42
	Stockholm, ditto, 18 38 to 18 42

Sir William Arrol has joined the board of the Fairfield Shipbuilding and Engineering Company (Limited).

Mr. Henry Thomas King has purchased the business of the late Mr. Tanner, Bicester, Oxon. Mr. John B. Ulph valued between the parties.

The Birmingham Iron Market, Thursday.—South Staffordshire is not benefiting to the extent expected from the enforced curtailment of production in other ironmaking districts. Buyers are evidently withholding their orders as far as possible in the hope of obtaining lower prices on the termination of the strike. Moreover, coal, though fairly abundant still in this district, is rapidly rising in price under the influence of the demand from neighbouring districts. The result is that, whilst ironmasters are compelled to pay more both for their coal and their pig iron, they are unable to obtain any equivalent advance on finished iron. The rise in coal alone is equivalent to about 10*s.* on the ton of finished iron, and there is, in addition, a substantial rise in pig iron, some kinds of which are now out of the market. Yet marked-iron quotations are unchanged at 7*l.* 10*s.*, and unmarked iron has risen only from 5*s.* to 10*s.* In the absence of good shipping orders, however, the volume of demand is not sufficient at present to enable producers to stand out for remunerative prices. All they can do is to confine their attention to the orders that pay them best. Further evidence of the unprofitableness of trade is afforded by the report of Lord Dudley's Round Oak Ironworks, showing a loss on the year's working of 3,881*l.*, in spite of the great retrenchment effected a year ago. Several private concerns have temporarily closed their works until the arrival of better times. Galvanisers report a slowly-improving demand for corrugated sheets for Australia, South Africa, and India; but the South American demand is temporarily paralysed, and prices are without improvement. Merchant-bars are 6*l.* 5*s.* to 6*l.* 10*s.*; common bars, 5*l.* 15*s.* to 6*l.*; sheets, singles, 7*l.*; doubles, 7*l.* 5*s.* to 7*l.* 7*s.* 6*d.*; thin strip and hoop iron, 6*l.* 10*s.*; tube-strip, 5*l.* 17*s.* 6*d.* to 6*l.*; steel plates, 7*l.*; billets, 4*l.* 12*s.* 6*d.*; boiler-plates, 6*l.* Staffordshire pig is unchanged. Northamptonshire is quoted 46*s.* 6*d.* Forge-coal is 12*s.* 6*d.*

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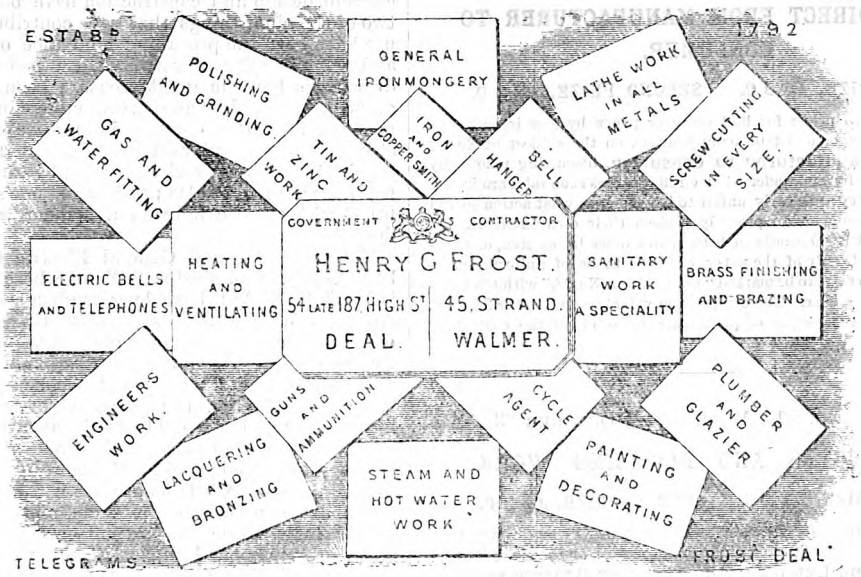
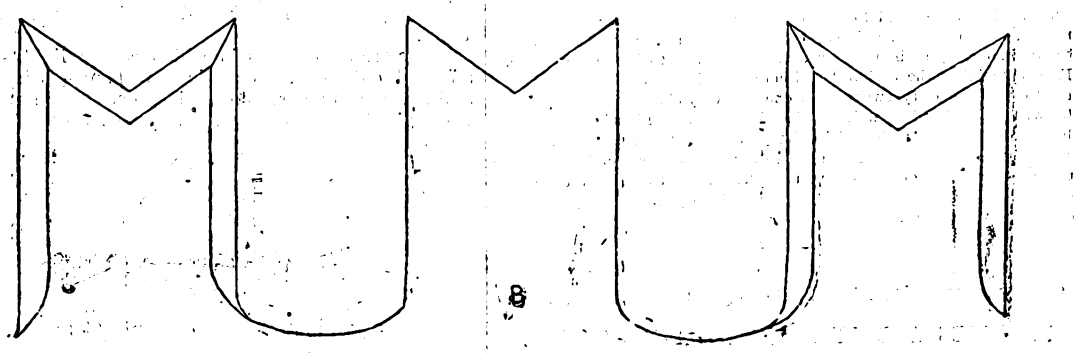
AN IRONMONGER'S TRADE-CARD.

THE accompanying business-card, issued by Mr. Henry G. Frost, Deal, is a creditable specimen of trade enterprise, the grouping and variety of the cards displaying considerable ingenuity,



A "LIGHTNING" SAW.

NOT long ago, remarks THE AUSTRALASIAN IRONMONGER, we printed a sketch and full description of the axe which was considered as near perfection as possible by the members of the United Australasian Axemen's Association, or, at any rate, by those who met at Latrobe, Tasmania, to discuss the question. In a later issue we mentioned that one or two men in Tasmania had acquired for themselves a great reputation for the setting of saws for the purposes of competitions in sawing. After some trouble we have secured, through the Secretary of the Axemen's Association, a sketch of the form of tooth which is most favoured. He informs us that recently at Barrington, Tasmania, with a saw done up by Mr. J. H. Williams (the originator of the method and the author of the sketch), R. Chatwin cut through a hardwood log 6 feet in girth in a minute and a half, and the two Chatwin brothers, sawing double-handed, afterwards cut through a similar log in 26 seconds. There are but two men in Tasmania who do up saws on these plans. The saw from which the sketch was taken was one Disston's "Lightning" saws with the middle tooth taken out The plan does not show the amount of set given to the tooth. Mr. J. H. Williams, who furnished the information, is a thorough expert. We are told that, blindfolded, he can mark with chalk the slightest bump or dint in a saw. He writes that the saw should be in length about 6 feet 6 inches; the width, 8 inches at the breast and 5 inches at each end; the weight, about 9 lbs. for either double or single handed. The usual number of teeth to the foot is seven and a half, but he prefers six teeth to the foot, which is much more easily sharpened. The teeth should be 1⅛ inch wide, the gullet ⅞ inch. The illustration is drawn to scale.



Robbins & Co., Dudley.—We are asked to state that Mr. Robbins retired from the works of this firm over three years ago. Mr. B. Baugh retired June 30 last, and Mr. W. Elliott is now sole proprietor. Messrs. Robbins have supplied their London agent, Mr. B. Simkin, 25A Hatton Garden, with a collection of new patterns for the season, which are now on view.

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THE IRONMONGER PRIZE COMPETITIONS

COMPETITION No. 13. WILL CLOSE OCTOBER 23, 1893.

SALES DIRECT FROM MANUFACTURER TO CONSUMER.

FIRST PRIZE, £3 3 0. SECOND PRIZE, £2 2 0.

WE offer these two prizes for best essay or paper by any ironmonger, ironmonger's manager, assistant, or apprentice, on the subject of **Sales Direct from Manufacturer to Consumer,** discussing practically and concisely how far and under what circumstances such sales are justifiable, and where they are clearly unfair to ironmongers what action should be taken by ironmongers to properly protect their own interests. No essay must exceed 2,000 words in length, and must be written, or typewritten, on one side only of the paper, which is to be of uniform small-foolscap size. All essays to be marked "Competition No. 13," with the name and address of the sender. The competition will close on October 23, 1893. The Editor reserves the right of publishing any or all of the competing essays.

COMPETITION No. 14. WILL CLOSE OCTOBER 23, 1893.

IRONMONGERS AND PLUMBING WORK.

FIRST PRIZE, £3 3 0. SECOND PRIZE, £2 2 0.

WE offer these prizes for the best essays or papers by any ironmonger, ironmonger's manager, assistant, clerk, or apprentice, on the **Best Means of Retaining and Extending the Plumbing Department** of an ironmonger's business. All essays to be written, or typewritten, in a practical and concise manner on one side only of small-foolscap size paper, and must not exceed 2,000 words in length. Each essay or paper to be marked "Competition No. 14," with the name and address of the competitor. The competition will close on October 23, 1893. The Editor reserves the right of publishing any or all of the competing essays or papers.

COMPETITION No. 15. WILL CLOSE OCTOBER 30, 1893.

BEST DESIGN FOR A CHRISTMAS WINDOW.

FIRST PRIZE, £3 3 0. SECOND PRIZE, £2 2 0.

HESE prizes are offered for the best design, with explanatory written matter, for an ironmonger's **Christmas Window.** Competitors may be ironmongers, their managers, assistants, apprentices, or foremen. Essay explaining the design should not exceed 1,000 words in length, and must be written, or typewritten, on one side only of small-foolscap paper. Drawings must be of the uniform size of 18 inches by 12 inches, and must be in ordinary black ink on stiff white paper, sent in flat and not folded. Both essays and drawings to bear the words "Competition No. 15," with the name and address of the competitor. The competition will close on October 30, 1893. The Editor reserves the right of publishing any or all of the competing designs.

COMPETITION No. 16. WILL CLOSE OCTOBER 30, 1893.

FIXTURES AND FITTINGS OF A NEW SHOP.

FIRST PRIZE, £3 3 0. SECOND PRIZE, £2 2 0.

THESE prizes are offered for the **Best Essay,** with working-drawings, showing how new shop, 60 feet long by 25 feet wide and 14 feet high, should be fitted for the use of an ironmonger. The shop is supposed to have quite clear space within, and the essay and drawings must show and describe all the fixtures and fittings, including the lighting by gas, oil, or the electric light. The essay must not exceed 2,000 words in length, and be written, or typewritten, on one side of small-foolscap paper. All drawings must be in ordinary black ink on stiff white paper, sent in flat and not folded. Both essays and drawings to be marked "Competition No. 16," and with the name and address of the competitor. The competition will close on October 30, 1893. The Editor reserves the right of publishing any or all of the competing essays and drawings, or of withholding one or both prizes should he consider none of the essays sufficiently meritorious.

ELECTRICAL PROGRESS.

SMALL SECONDARY BATTERIES AND THEIR USES.

ALTHOUGH for some years small secondary cells of very efficient design and construction have been on the market, two of the chief things that have contributed to retard their use have been the prevailing ignorance of their advantages and the difficulty of getting them recharged. Both these drawbacks have in great measure been now removed, for every day the public are getting more educated in electrical matters, and the continued increase in the number of electric-light central stations and isolated plants affords the required facility for recharging the batteries at the cost of a few pence. This is also possible on one's own premises, if fitted with electric light, in a manner we shall afterwards describe.

The Lithanode and General Electric Company, 64 Millbank Street, Westminster, S.W., of whose works the manager is Mr. J. T. Niblett, have long made a specialty of the construction of portable secondary batteries, the "active material" in the plates of which is known as "lithanode." Lithanode differs from the plain peroxide of lead used in the positive plates of other types of secondary cell in many important particulars, the principal of which are that the lithanode plate is not liable to disintegrate when immersed in the electrolyte or battery solution, even when overcharged or over-discharged; and, furthermore, local action is reduced to a minimum. A lithanode plate will bear discharge at the rate of from one-fourteenth to one-ninth of an ampère per square inch, while the capacity when discharged at the above rates is about 1 ampère-hour per oz., so that, with an element weighing 1 lb., a current capacity of 16 ampère-hours is available. The E.M.F. of a lithanode cell in which an ordinary spongy lead negative-plate is used in 2 volts; but if a cell is made up—as is occasionally done for special work—with an amalgamated zinc plate in place of the spongy-lead plate an E.M.F. of 2½ volts is obtainable. The company do not now confine themselves to the manufacture of the small cells in connection with which their name is known, but are turning out larger types adapted to private installation and central-station work, and they have constructed cells for the latter class of work capable of discharging at a rate of 1,000 ampères for a period of one hour without any appreciable diminution in E.M.F. The lithanode is made up in comparatively large slabs with V-shaped edges. When these are dry and have been subjected to the "forming" process, they are arranged in a mould, and the lead frame cast round them.

There are many cases in which a safe light—such as is afforded only by an electric glow-lamp—is indispensable, and there are numerous other instances where such a light, if not absolutely necessary, is very desirable. This will be

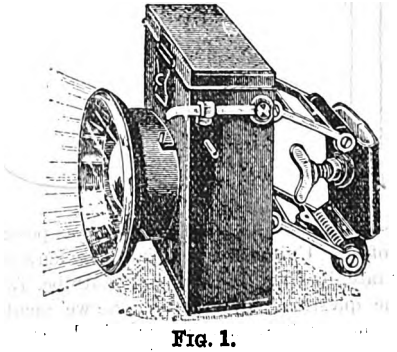

FIG. 1.

the more evident when we state that in a recent report of the Metropolitan Fire-brigade for a certain year no fewer than 156 fires were attributed to the upsetting of oil-lamps. A small secondary battery is admirably adapted for use in stables, drying-rooms, stores, &c., and also for outdoor work, for the lamp, being hermetically sealed, cannot possibly be extinguished by rain or wind. For gas-inspectors, firemen,

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Customs officers, and other officials who have frequently to work in places where a naked light would be dangerous and even liable to extinction, these portable electric lamps have been found invaluable.

Fig. 1 represents a self-contained bicycle or tricycle battery and lamp, which at first sight could hardly be distinguished from an ordinary oil-lamp. The battery is contained in an outer metallic case, which is fitted on one side

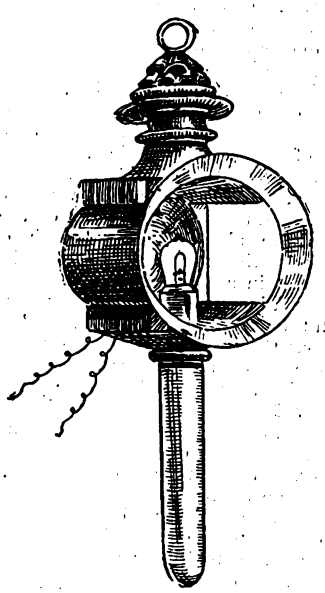

FIG. 2.

with a small lever switch, by means of which the lamp may be readily switched "on" or "off." This will be found a real boon to the cyclist, from the absence of heat and smell, its imperviousness to wind and wet, its cleanliness, and the fact that there is no troublesome dirty wick to trim, and no

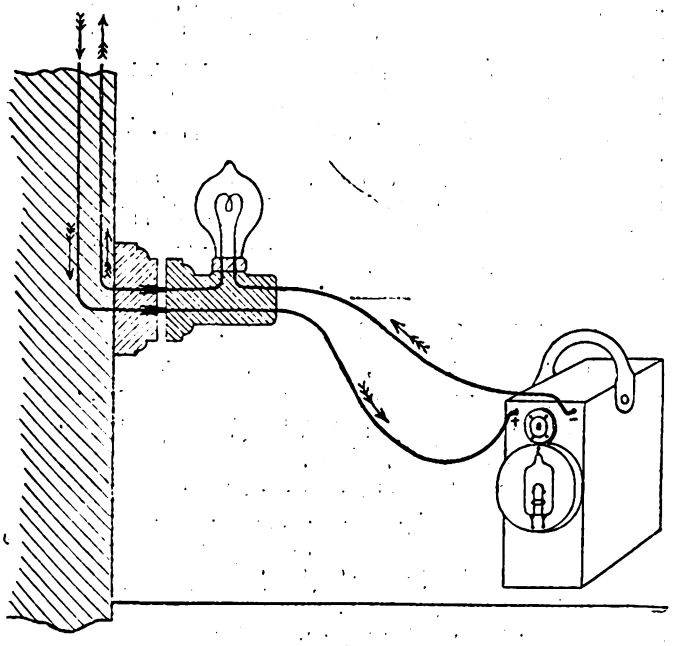

FIG. 3.

need of fumbling about for matches. Fig. 2 shows an ordinary carriage-lamp fitted with an electric glow-lamp. In this case the battery is a separate affair, which is generally placed in a box under the driver's seat. One and the same battery can be used to furnish current for both the side-lamps of the carriage as well as any interior reading lamp or lamps that may be used.

A very considerable branch of the business of the Lithanode and General Electric Company consists in the lighting of omnibuses and other vehicles. The battery consists of five cells, mounted in a stout wooden box and provided with a convenient strap-handle, the whole weighing about 25 lbs. This battery is capable of discharging at the rate of 1 ampère, at an E.M.F. of 10 volts, for a period of from fifteen to twenty hours. A strong wooden box of somewhat larger dimensions than the battery-box is fixed under the driver's seat, and into this the battery is lowered. Two brass springs in connection with the wires to the lamps are fitted on the inner side of the battery-containing box, and when the battery is lowered into position these springs make contact with brass plates on either end of the battery, the plates forming the terminals of the latter. Thus the very action of placing the battery in its receptacle suffices to put it in circuit, and there is no trouble with or fear of bad connection. The lamp is of five-candle power usually, and is backed by a white reflector and protected by a stout glass dome. The conductor can put the lamp in or out of action by twisting the dome and its bezel round slightly, the latter being provided with a switch on its under-side. A line of West-end and City 'buses have for some time been fitted on this system; and the fact that the number of vehicles so fitted is constantly increasing speaks well both for the advantages of the light and the efficiency and durability of the work.

At the beginning of this article it was mentioned that provided one's house or premises happened to be supplied with electric light, the recharging of small batteries could be easily effected. In fig. 3 a wall-socket is connected with the house-mains. The wall-plug, which fits into the socket,

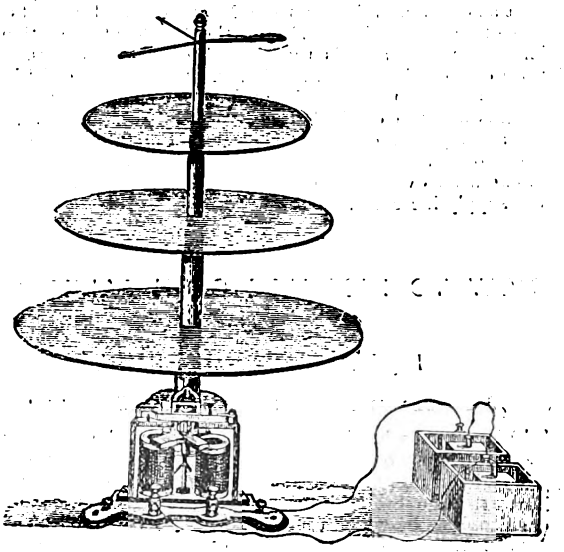

FIG. 4.

is provided with a lamp-holder and lamp, and two flexible leads for connecting up to the charging-terminals of the battery. The wall-plug is so arranged that the current passes first through the battery and then through the lamp, or *vice versâ*. If the battery were connected up directly to the house-mains, which are generally at a pressure of 100 or 50 volts, far too great a current would pass through it, and the battery would be in all probability ruined. The interposition of the lamp on the wall-plug in the circuit cuts down the current to a safe value. This lamp also acts as an indicator, as one can tell directly by the glowing of the filament whether any current or not is passing through the battery, and also the progress of the charging of the battery, as evidenced by the gradual diminution in the light of the lamp. Another arrangement in vogue does not necessitate the use of a special wall-socket and plug. The method of charging is just the same, however, the apparatus providing for the insertion of an incandescent lamp in series with the battery. It should be borne in mind that these methods of

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recharging batteries from the house-mains are only applicable when the electric-supply system is a constant-current one, an alternate current being useless for this purpose.

Fig. 4 (p. 589) illustrates an effective rotating stand for shop-windows, the motive-power being supplied by a small portable battery actuating an electromotor at the base of the instrument. The illuminated electric fountain is another of many electric devices which are used by shopkeepers as an attraction in their windows and showrooms. The supply of portable batteries for those various electric stage-effects with which we are now so familiar forms another important branch of the Lithanode and General Electric Company's business. Those who are concerned in the matters dealt with in this article will find a visit to the showrooms and works in Millbank Street both instructive and interesting.

The General Electric Company (Limited), 69 and 71 Queen Victoria Street, E.C., have acquired the incandescence-lamp factory built by the Brush Electrical Engineering Company at Brook Green, Hammersmith, W., for the purpose of manufacturing incandescence-lamps. The plant now existing and in course of erection will have a productive capacity of over one million lamps per annum. The management will be in the hands of Mr. C. J. Robertson, well known both in England and on the Continent as an experienced glow-lamp maker.

The Electric Light in Manchester.—The Manchester Corporation electric-lighting station at Dickenson Street started practical work on Monday night, when it supplied the current to nearly ten thousand eight-candle power incandescence-lamps in the city, but it will be able to supply 30,000 lights when completed. The system of supply adopted is the five-wire system, which enables the engineers to supply a current at different voltages from 100 to 400, and permits the use of smaller wires. This is the first central station in England which affords these facilities to consumers. The total cost of the station, its site, and the appliances will probably amount to about 150,000*l.* One hundred thousand pounds was the original figure for the work, and 70,000*l.* has already been expended; but it is the intention of the City Council to apply for power to spend another 80,000*l.* in extensions which are deemed necessary as the demand for the supply increases.

HOW TO INCREASE CASH SALES—2-3.

EQUAL SECOND PRIZE.

BY GILBERT MELNOSS, NORTH SHIELDS.

TO increase cash sales is becoming more and more the aim of every go-ahead ironmonger. The pushing draper has had this aim for many years now, and has reaped a rich harvest. The Stores owe their success to their system of cash trading, by which their customers are supplied at much lower rates than they ever could be under the credit system. Every new starter directs his special attention to draw the cash trade, and, having drawn it, tries to keep it. In consequence of these forces many old-established ironmongers have found their cash trade decreasing, until, perhaps, it only represents about 25 per cent. of their business, and in many cases even less than that. This is the class whom we wish to advise towards a better state of things. First of all, buy well. If you have been conservative in buying, turn liberal, and so prove whether your old firms have been supplying you at bottom prices. Next, pay promptly, and get the best cash discount. Also buy in proper quantities, so that in many cases you may have your goods carriage paid. Always have your windows clean, and well-dressed with seasonable goods all marked with a cash-price ticket. Don't be frightened to mark an article 1*s.* 1½*d.* or 9*s.* 11*d.* This is the drapers' style, but it's one of their trump cards. Advertise freely in your local paper, and when you have bought a large consignment of anything let the public know about it, and don't forget to intimate that you allow 5 per cent. discount on all purchases. In selling, always show a customer what difference this makes, and you will be surprised at the number who will take advantage of it Circulate handbills headed "Cash *versus* Credit," setting forth the great advantages you are giving under the former system, Send good circulars to your better-class customers of lawn-mowers and other goods in their seasons. showing your net cash prices the same as the Stores, and draw your customers' attention to this.

Always have a leading line of specially-good value in your windows, but don't always sell it. Try and sell what will pay you better. Have an occasional clearance-sale—say, before stocktaking or after it (the draper makes use of both excuses). Go over all your furnishing stock, reduce any old or soiled stock to a clearance-price; reduce little else, but put a sale-price ticket on—say, 9*s.* 11*d.* instead of 10*s.*—also have some special cheap lines bought for the sale. A partial-clearance sale should also be run as often as possible—say, for instance, of coal-vases or fenders, towards the end of the season. Advertise that some of these are slightly soiled and must be cleared. Ticket each article with the original price and sale price, and this will draw a lot of the lady bargain-hunters, who are always prepared with cash for these occasions. Gasfittings, oil-lamps, travelling-trunks, &c., should be treated in a similar manner. Perambulators and mail-carts should be pushed well during their season. Good posters, with the words "Low Cash Prices" prominent upon them, are about the best means of advertising these. With regard to these last-mentioned articles, and also sewing and wringing machines, it is as well to make your prices so that you can allow 10 per cent. for cash, because all sewing-machine dealers, most of whom deal also in perambulators and wringers, allow that discount for cash, getting the full price, however, on their easy-payment system.

The tool trade is another branch which can be worked on cash lines; therefore, push it well. Refuse firmly to give any workman credit for tools, or you will lose more than you will make. Get up a neat tool-list, with all prices as low as you can make them, and on the foot of every page state that you allow 5 per cent. discount for cash.

With regard to builders' hardware, ranges, stoves, &c., it is not possible to do a cash trade—at least, not to any extent. The best you can do or hope for is to have the terms of credit shortened, and only monthly accounts given. Stop all customers taking one to two years' credit. You will find you are better without these. Have your cash terms plainly printed on your bill-heads. Head your bills, if you like it, "The Cash Ironmongery Store." Establish your character as an up-to-date ironmonger; keep good smart assistants, and pay them well.

Always be prepared to sell at Store prices, and don't let a customer go away with the idea that you cannot compete. Buy as good articles as you can sell in proper quantities, and put on a reasonable profit. Keep pegging away at your advertisements; let them be short and original, always keeping to the front the advantages of cash trading, and in a short time you will find your cash sales moving upwards, and you will have money to pay your accounts promptly, and at the same time your bad debts will be fewer, and your business in general much easier to manage.

EQUAL SECOND PRIZE.

BY ALFRED F. SMITH, HAILSHAM, SUSSEX.

FOR several years I have struggled with the difficult undertaking of endeavouring to get a better percentage of cash takings over those of credit, and being placed in what I suppose is about the most difficult class of business to do this, I thought I might assist my ideas to my own advantage by putting them on paper.

My meaning in saying that mine is a difficult position is this. It is a business in a small town dependent entirely on customers who get their living, directly or indirectly, from agriculture. They have always been used to long credit, and are not easily brought to pay cash: and as a good proportion of the business is a working trade which is almost solely booking, it is still more difficult. I stimulate myself to increase the cash takings by every month making up an account showing in one column the ready money, and in another the credit money, taken. I then refer to the previous year, and so see which way the tide is flowing. If the proportion of ready money is better, I am induced to try and still better it; if worse, I am dissatisfied, and try and make

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it up next month. I also give my assistants a small percentage each month, so that they may also be induced to assist me in increasing the returns, which I am satisfied they do.

Beyond this, to customers who purchase goods over 10*s.* I give a discount ordinarily of 5 per cent., but cannot make this a hard-and-fast rule, as there are some large articles—such as cycles, mangles, perambulators, and implements, which are advertised by the makers and cut by the Stores—from which a greater discount must be taken to secure the customers. I find it of advantage to ticket all goods as far as possible with plain prices for cash; for large goods tickets made of tin painted black, with white letters and figures, are very effective, and easily done by anyone who can make a good-shaped figure; of course, small articles would have card tickets. When sending out lists or sheets (which should be often), I use a rubber stamp to indicate the cash discount thus—

5% for cash.

I send my accounts out quarterly, and repeat in the case of the slow ones with an account rendered every month, as I think letting them go longer is an inducement for customers to take long credit instead of paying cash. With a business such as mine it is impossible to do a strictly ready-money business; all we can do is to take every opportunity of setting its advantages before the public. For instance, when quoting prices you can offer a special discount if paid on delivery or within a stipulated time, and by marking goods thus—

15/6.
For cash
14/9.

This kind of thing helps to educate people to the advantages to be gained by prompt payment. Even those customers who have an account will, when buying goods so marked, often say, "Oh, I may as well pay for this and save the booking-fee."

Any special line (put outside of the shop, if possible), well ticketed, I find, helps—for instance, on a market day a pile of dandy-brushes, marked—

10½d. each.
Half-dozen
for 4/6.

are sure to go. I have sold grosses this way. There are many other articles that can be worked off so—for instance, sponges, currycombs, scrubs, &c. Galvanised tubs or buckets, marked with large black figures and well exposed, sell extremely well. I find customers like to handle goods so as to know what they are buying. Credit customers often put down the cash for goods when so shown and priced. I enclose with the September accounts a circular with the prices of paraffin by the cask, showing a good margin for cash. When I am ordering nails or other heavy goods I try and get a line from builders or others to come with them, giving a special inducement and cash terms. In regard to the working-part of the business, the only thing is to keep well posted up, so as to be able to render accounts promptly; this department cannot be worked on the same lines as the counter trade. To sum up in the old-fashioned way of firstly, secondly, and thirdly:—(1) Render accounts promptly; (2) mark all goods plainly, with special cash prices; (3) make cash terms a leading part when advertising; (4) when quoting for goods or work, state special terms for cash.

THE CHICAGO EXHIBITION.—5.

(SPECIAL NOTES BY PRACTICAL MEN.)

LABOUR-SAVING APPLIANCES.

ANYONE interested in machine-tools naturally turns first to the Machinery Hall, one of the finest buildings in the Fair, measuring, with the extension, 1,350 feet by 500 feet, and built at a cost of £1,200,000. What strikes anyone on first entering the building are the three high cranes which span the three naves; they are each 75 feet span, with a lifting capacity of 40,000 lbs. On one or other of these a brass band performs daily as the crane travels backwards and forwards the full length of the building, so that those in charge of the exhibits, and their visitors, can be entertained without leaving the scene of business. These cranes are of twin design, and are electric-driven by the Thomson-Houston motors. The power to drive the machinery in this building is supplied by a power-plant said to be the largest ever yet laid down, consisting of boilers capable of producing 24,000-horse power. This power is for the most part converted by immense dynamos into electric energy, which is distributed by a system of underground galleries and conduits to the large buildings. Two of these dynamos, of a capacity of 10,000 lights each, are run by the great Allis engine. Of the 24,000-horse power developed 17,000 is devoted to electricity. The boilers are supplied with oil for fuel, instead of coal, piped direct from the Indiana oilfields to Jackson Park.

The attention is immediately drawn on entering to a novel lathe, shown by the Hendey Machine Company, Torrington, Conn. The Hendey Machine Company's "Norton" improved screw-cutting engine-lathe is fitted with the ordinary train of change-gears, mounted in the form of a cone directly on the main guide-screw, and is secured thereto by one key, the whole being enclosed in a box of cast iron, which at once forms the cover of the gear and the bearings at the other end of the guide-screw. In the lower part of this box is arranged a driving-shaft, with bearings parallel to the screw. This shaft has also a key, fitted the full length, and has sliding up it the stud-gear, its position relative to the gears in the cone being controlled by a handle the inner end of which is a forked casting, with bearings on either side of the gear; and in the upper extension of the same fork are the bearings for the intermediate gear, which is thrown in and out of the various gears with the greatest ease. There is an index-plate on the front, with notches of sufficient depth to receive and guide the handle and gear in perfect line with the cone-gear wanted, the thread which the combination will cut being stamped above each notch. The latch for holding the handle and gear in place is arranged to secure the handle both in and out of contact. This device will greatly economise the time of anyone with a variety of screw-cutting to undertake, and the possibility of breaking the teeth of the wheels is reduced to a minimum, each wheel having to be the correct depth in gear or altogether out. For traversing this device has the same advantages as for screw-cutting, giving thirty-six distinct feeds by the two changes. A handle at the right-hand side of the saddle reverses the traverse from right to left hand. This machine was patented March 8, 1892, and it should not be long before it finds its way into many turning-shops here. It is already made in 7, 8, and 9 inch centres.

Heinr. Ehrhardt, Düsseldorf, has a fine collection of saws for cold iron and steel. A hand-driven machine to saw, drill, and bend rails, mounted on trolley-wheels, is a novelty, and for platelayers' use should supply a want. A semi-

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automatic omery grinder for sharpening the teeth of the circular saw is attached.

Hurlbut's patent cutting-off machines attract considerable attention. They are made to cut off bars up to 6 inches diameter. The patent consists in working two tools in the same cut, with patent adjustable nut on one box. The ordinary cone machine is simplicity itself, and can be worked by inexperienced hands, having two speeds on the countershaft, so that when the tools are half-way through the shipper can be thrown over and a faster speed speed used for the remainder of the cut. But a far superior tool is the patent automatic accelerated-speed machine, which produces a constant cutting speed, and doubles the product. This automatically increases the speed of the stock as the tools advance, thereby working the tools to their full capacity throughout the cut, and whatever size is to be cut, the proper speed is automatically obtained by simply moving the tools into place to begin the cut. By thus maintaining a constant cutting speed down to a small diameter, the capacity of the machine is much increased, and the actual cutting time reduced to about one-third that usually required. This machine also has the duplex cutting-tool. Hill, Clark & Co. are the selling agents.

Beaman & Smith exhibit their patent safety drill and tapper, for tapping dead bottom-holes with the aid of any revolving spindle, without breaking the taps. Such an appliance is now a necessity in all well-regulated engineering-shops. There is not only the saving in the breakage of taps, and a gain in time over hand labour, but every hole tapped with it is vertically true, and the studs stand perfectly upright, saving much labour by avoiding the correcting of any difference from the straight line, which is often the result of tapping by hand. This useful apparatus is driven by friction, and though not so perfect in design as the Morris patent tapper, so well known in England, yet, from the fact of being a little cheaper, may find many sales. Whether it will be cheaper in the long run remains to be seen. This same appliance may be used for putting in the studs also. The only drawback with this tool is that the driving-spindle of the drilling-machine requires reversing to bring back the tap or stud-inserter, necessitating two sets of pulleys on the countershaft. If a tapping-apparatus with reversing arrangement could only be put in the market, what a boon it would be!

The Long & Allistatter Company, Hamilton, Ohio, have a very good display of punching and shearing machines. The one for automatic spacing calls particularly for attention. This is for punching holes in series, and is self-acting, and the spacing is adjustable. Another useful tool will trim and bevel, space, and punch the holes in boiler and other plate work. The spacing is adjustable, and the whole automatic. This firm have also on view a fine machine for shearing angle iron, either square or at right or left hand, without swinging the bars or turning them end for end, thus permitting long work to be done in narrow shops; and the bars may be passed endwise through the machine, so that either end can be sheared without turning the bars. This machine is mounted on a turntable and driven by a vertical shaft, so that it can be swivelled round and faced in any direction for use in any position. This arrangement is effected by having a rack all round the circular base, in which works a pinion-wheel.

Mr. Walter Scott, on behalf of the Rio Tinto Rock-drill Company, has an exhibit that draws great crowds, as one or more of the drills are always pounding away on the stone. Another drill is shown by the Steam Stone-cutter Company, Rutland, Vermont, but this is more for channelling and quarrying, and consists of a number of cutters held in a frame, which is adapted for cutting vertical or inclined channels to any angle down to 45°. The operating mechanism and cutting devices are mounted on a portable sliding carriage, and, by means of a long screw-shaft, can be readily adjusted to either end of the frame, thus making it a right or left handed machine, thereby enabling it to cut in all corners of a quarry. An engine is attached to the standard that gives direction to the gang of cutters, and motion is communicated to the cutter by means of two levers, the upper ends of which are pivoted to the crosshead of the engine, and their lower ends are connected by links to the lower clamp-block which holds the cutters. A rubber spring interposed between the levers makes the connection between the crosshead of the engine and the cutters a yielding one, by which all shock is cut off from the engine, and a perfectly elastic blow is given in the operation of the cutters. The cast-steel cutters are chisel-pointed, and clamped together at head and foot. The centre one extends the lowest, and those on each side are stepped. The upper ends of these bars are grooved to match corresponding grooves in the head-clamp for the purpose of preventing displacement. These are made either as single or double gang machines, and are capable of turning out a lot of stones expeditiously.

Brown & Sharp have a collection worthy of their great reputation. Milling-machines of all sizes, vertical chucking-machines, "Universal" grinding-machines for truing up hardened-steel shafts, reamers, &c. (parallel or taper), gear-cutters, and a most extensive assortment of milling-cutters.

The Oil-well Company show screwing-machines of the largest size made anywhere, to screw tube up to 12 inches diameter. These are sometimes required for their well-tube.

The Niles Tool-works Company have on show a large planing-machine, which is well designed. They are the only firm who have an exhibit of heavy machine-tools, and firms abroad have still an opportunity of supplying the United States with the heavier class of machine-tools.

Pratt & Whitney have an "Admiral" milling-machine at work on external milling. It roughs and finishes at one cut, with three cutters on the edge and sides of a fly-wheel, 36 inches diameter, which revolves, passing between two side cutters and against one flat cutter. The spindle-bearing is 24 inches long, 9 inches diameter, and takes a belt 4 inches wide to drive it.

WOOD-CUTTING TOOLS IN HONDURAS

SIR C. A. MOLONY, H.B.M. Consul at Belize, has forwarded to the Colonial Office in London a selection of tools used in Honduras for the purpose of cutting trees, &c., supposed to be all of American origin. The Colonial Office in turn has handed over the tools to the London Chamber of Commerce, St. Botolph House, Eastcheap, E.C. Between the hours of 11 A.M. and 4 P.M. the public are admitted to inspect these tools, on production of a visiting-card. By the permission of the courteous secretary of the Chamber of Commerce we are enabled to present to our readers sketches of the tools (p. 593). The selection is not a large one, and includes Hartford, U.S.A., make of plain polled, large and medium hatchets, several Kentucky axes, a Pennsylvania broad axe, two horn-handle matchets of the semi-cutlass pattern (these are Birmingham, England, made goods, and of a very well-known brand); a square block-axe, a long "beating" axe, and a horn-handle straight-cut-and-thrust machet. An inspection of the tools gives rather a disappointing impression, and one can learn very little therefrom. It would seem as though Sir Alfred Mahony, from praiseworthy motives, had endeavoured to wake up the long-settled question of English *v.* American axes. But he can scarcely hope to cause much stir in the trade on this subject at this late date. The Americans, undoubtedly, make excellent-quality axes, and have evidently got firm hold of the Honduras market. The natives of that country, with the peculiar conservatism of their race, having once been used to American axes, do not readily take to English-made goods, even if of the same standard of excellence. We have very little to say against this conservatism with regard to tools, &c., for whilst it acts against the British nation in one or two countries, the rest of the world takes British goods for the very same reason of conservatism, so that if we are temporarily shut out from one or two markets we ought to be content to wait, but at the same time not to neglect any opportunity of favourably impressing the native mind with the fact that English axes are nowadays of equal excellence with American-made articles. With regard to the machets English makers of repute are well to the front in Honduras, and if Sir Alfred Mahony means that the specimens he has sent over are in common use there, then it is evident that English machets command the largest sale.

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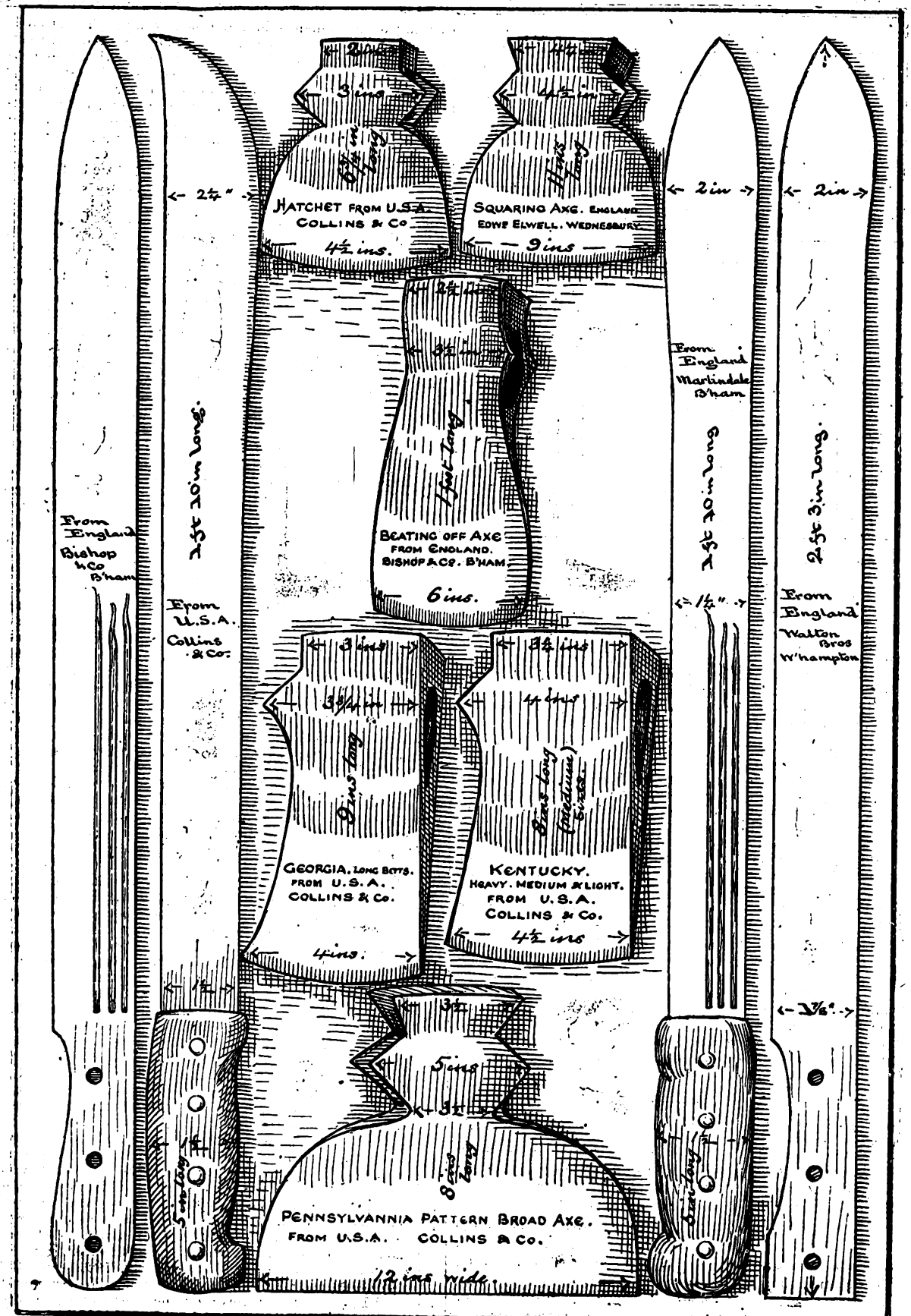

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IRON, STEEL, AND FUEL.

London, Wednesday Evening.

OUR IRON MARKET BAROMETER.

Scotch Warrants			Cleveland, No. 3 Pig			Hematite Pigs, Mixed Numbers		
Prices	Last Week	This Week	Prices	Last Week	This Week	Prices	Last Week	This Week
s. d.			*s. d.*			*s. d.*		
43 0			36 0			46 3		
42 10½			35 6			45 9		
42 9½			35 4½			45 6		
42 8			35 3			45 3		
42 6½			35 0			45 0		
42 6			34 10½			44 10½		
42 5			34 9			44 9		
42 4½			34 6			44 6		
42 2			34 4½			44 3		
42 0			34 3			44 0		
41 10			34 0			43 10		
41 9½			33 9			43 9		
41 8			33 6			43 8		
41 6			33 3			43 6		
41 3			33 0			43 3		
41 0			32 10			43 1½		
40 10			32 9			43 0		

Pig Iron.—During the past week there has been no business at all reported. Friday's quotations for Scotch were 42*s.* 8½*d.* cash, and 42*s.* 11*d.* a month. Middlesborough ruled at 35*s.* 6*d.* cash to 35*s.* 8*d.* a month, and hematite at 45*s.* cash and 3*d.* extra for one month. On Monday Scotch was 2*d.* lower, Middlesborough 2½*d.* lower for cash and 2*d.* for a month. Hematite was 3*d.* lower all round. A drop of another penny in the value of Scotch was chronicled on Tuesday, and Middlesborough shared the same decline. On Wednesday Scotch dropped a further 3*d.*, Middlesborough 2½*d.*, and hematite from 2½*d.* to 3*d.*

Manufactured Iron.—The topic of the day in all departments of the trade runs on the coal-strike and its sequences. In some large centres that have hitherto suffered from want of fuel the past week has seen stocks very largely increased by arrivals from Durham, &c., and even from Belgium. Of course, the price is high, but some manufacturers are doing a certain amount of work. Prices are unsettled for nearly all manufactured iron, values in certain places having risen and in others fallen, the local circumstances playing a very important part. On the whole, very little extra work has been done during the week. Old materials are in rather better demand for export, with vacillating quotations.

Steel and Steel Rails.—Some of the large Sheffield firms have just received some fair Governmental orders for armour-plates, and the heavier branches of the steel trade are fairly busy. In fact, more briskness is displayed than for some little time past. The general steel trade awaits the settlement of the coal-strike. Steel rails are not in demand just now, and public inquiries are remarkably scarce, there being none of importance on the market, save one for the Colonial Office, which was referred to some weeks ago.

Scotland.—The iron market became more active towards the end of last week. Scotch iron has been in moderate request hitherto, but it is thought highly probable that, no matter how soon the labour disputes may be arranged in England, increasing supplies may be wanted from here before matters assume their wonted position there. Scotch warrants have, therefore, been a little more in request. There is still an almost entire absence of public speculation in warrants, the dealing being practically confined to the members of the iron "ring." An increasingly large business is being done in Cleveland warrants in the Glasgow market, about 30,000 tons having changed hands in the last few days. This iron is being purchased mainly by dealers who have been generally against the market, the inference being either that they consider the iron cheap enough to purchase as an investment or have thought it prudent to buy so as to cover previous oversales. In whichever way they may be actuated, their operations are held to be indicative of an improvement in the consumption of Cleveland iron in Scotland, and that such an improvement is taking place is confirmed by circumstances altogether independent of the market. There are 39 furnaces in blast—the same number as last week—compared with 78 at this time last year. The prices of pig iron are as follow:—G.M.B., f.o.b. at Glasgow, No. 1, 43*s.* 6*d.*; No. 3, 43*s.*; Carnbroe, No. 1, 44*s.* 6*d.*; No. 3, 44*s.*; Clyde, No. 1, 47*s.*; No. 3, 44*s.*; Gartsherrie, No. 1, 49*s.*; No. 3, 46*s.*; Summerlee, No. 1, 50*s.*; No. 3, 46*s.*; Calder, No. 1, 50*s.*; No. 3, 46*s.* 6*d.*; Langloan, No. 1, 55*s.* 6*d.*; No. 3, 46*s.* 6*d.*; Coltness, No. 1, 56*s.*; No. 3, 48*s.* 6*d.*; Glengarnock, at Ardrossan, No. 1, 49*s.* 6*d.*; No. 3, 46*s.*; Dalmellington, No. 1, 47*s.*; No. 3, 45*s.* 6*d.*; Eglinton, No. 1, 45*s.* 6*d.*; No. 3, 44*s.* 6*d.*; Shotts, at Leith, No. 1, 51*s.* 6*d.*; No. 3, 49*s.*; Carron, at Grangemouth, No. 1, 53*s.* 6*d.*; No. 3, 47*s.* 6*d.* The import trade in hematite ore into Scotland is quite suspended for the time. Merchants and shippers are anxiously waiting for a renewal of this business, but as yet consumers appear to be able to get along without fresh supplies. The steel trade is gradually improving in activity, and there are good specifications to be given out presently in connection with shipbuilding contracts. Ship-plates are quoted from 5*l.* 7*s.* 6*d.* to 5*l.* 10*s.*, less the usual 5 per cent. discount, for delivery in the Clyde district. The makers of sheets, both iron and steel, are very busy. They have become much more active in the last few weeks, during which quite a number of fresh orders, both for home use and export, have come into the market. The advance in the price of coal has added, it is said, about 7*s.* 6*d.* per ton to the cost of producing sheets, so that the makers will require all the extra work they can get to compensate them for this serious item of additional outlay. Single iron sheets are quoted 7*l.* 7*s.* 6*d.*: doubles, 8*l.*; single steel sheets, 7*l.* 17*s.* 6*d.*; and doubles, 9*l.* 5*s.*—all less 5 per cent. discount. A large amount of structural iron and steel is required in the home market for a great many enterprises now in progress. Were the labour conditions to remain favourable a successful season might be experienced by manufacturers throughout the coming winter. Makers of bars are fully employed. It is expected that the country demand will be quite satisfactory. The lowest grade of common bars is quoted 5*l.* 5*s.*; second grade, 5*l.* 7*s.* 6*d.*; highest grade, 5*l.* 10*s.*; best bars ranging up to 6*l.* 2*s.* 6*d.*—all subject to the usual 5 per cent. discount. In the tube trade there is more doing; additional work is not very difficult to obtain, but makers complain of the inadequate nature of prices, especially in view of the increased cost of fuel. A. & J. Stewart & Clydesdale (Limited) have made arrangements for important extensions and additions to plant, necessitated by the growth of trade, and it is understood that all these improvements are to be paid for out of revenue account. The prospects of the Steel Company of Scotland are believed to be brightening, and on this account the shares of the company, which not long ago touched 42*s.*, have recovered to 60*s.* There were shipped from Glasgow in the past week machinery worth 27,403*l.*; steel goods, 6,210*l.*; and general iron manufactures, 12,614*l.* The pig-iron market opened firm on Monday, but the prices gave way somewhat in the course of the day. Scotch warrants were done from 42*s.* 8½*d.* to 42*s.* 7*d.*, and Cleveland 35*s.* 4½*d.* to 35*s.* 3*d.* Hematites continue very quiet. Cumberland warrants receded from 45*s.* to 44*s.* 9½*d.*, and Middlesborough warrants were at 43*s.* 6*d.* On Tuesday the market was depressed, in consequence of the poor Scotch shipments and the absence of all speculative interest. Scotch warrants were done at 42*s.* 6*d.*, closing with buyers at 42*s.* 5½*d.* Cleveland was 35*s.* 2½*d.*, Cumberland hematite 44*s.* 9*d.*, and Middlesborough hematite 43*s.* 3*d.* The shipments of pig iron from Scottish ports in the past week amounted to 3,231 tons, as compared with 4,606 in the corresponding week of last year. There was no shipment to the United States, but Canada took 450 tons, South America 50, India 385, Australia 190, France 35, Italy 490, Germany 225, Holland 60, Belgium 25, Spain and Portugal 105, other countries 270; the coastwise shipments being 946, against 4,315 in the same week of 1892.

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North of England and Cleveland.—We have again to report quietness in the Northern iron trade, and quotations all round are a shade easier than they were a week ago. Makers of pig iron, however, are not badly off for work, and they are very reluctant to reduce their quotations. The fall in warrants has had a detrimental influence upon the market, and prospects generally are regarded as less satisfactory than they were a little while ago. Contracts for delivery of pig iron ahead have been entered into at lower prices than will be accepted for prompt delivery. On Tuesday there was a large attendance on 'Change at Middlesborough, considering that many of the leading men connected with the staple industry were attending the annual meeting of the Iron and Steel Institute at Darlington, but the tone of the market was flat and discouraging, buyers being very backward, and little business was transacted. A few lots of No. 3 G.M.B. Cleveland pig iron changed hands at 35*s.* 3*d.* for prompt f.o.b. delivery, and buyers, as a rule, were not prepared to give more than that figure, although some sellers asked 35*s.* 4½*d.*, and one or two makers held out firmly for 35*s.* 6*d.* For delivery of No. 3 over next quarter 35*s.* 3*d.* was accepted, and some firms were willing to accept even less. The lower qualities were a shade easier. No. 4 foundry was obtainable at 33*s.* 9*d.*, and grey forge was quoted 32*s.* 9*d.*, and even less prices than these were occasionally mentioned. Middlesborough warrants were steady throughout the day at 35*s.* 2½*d.* cash buyers. Local hematite pig iron was fairly firm, several sellers still asking 43*s.* 6*d.* for early delivery of mixed numbers, but transactions were recorded at 43*s.* 3*d.*, and buyers were not inclined to pay more than the latter figure. Spanish ore was quiet. Rubio realised 12*s.* per ton ex ship Tees, but attempts were made to purchase at rather below that price. The manufactured iron and steel trades keep fairly steady, but producers are somewhat more anxious to secure orders. Most firms, however, manage to keep pretty busy, and quotations are not reduced. Common iron bars are 4*l.* 17*s.* 6*d.*; best bars, 5*l.* 7*s.* 6*d.*; iron ship-plates, 4*l.* 15*s.*; iron ship-angles, 4*l.* 12*s.* 6*d.*; steel ship-plates, 5*l.* 2*s.* 6*d.*; and steel ship-angles, 4*l.* 15*s.*—all less the customary 2½ per cent. discount for cash. Steel rails are unaltered, heavy sections still being put at 3*l.* 17*s.* 6*d.* net at works. Fuel keeps steady. On Newcastle Exchange best Northumbrian steam-coal is 12*s.* 9*d.* f.o.b., and there is a fair demand for bunker coal, but prices are easier. At Middlesborough good blast-furnace coke is said to have been bought at 12*s.* 9*d.*, delivered at Cleveland works, but 13*s.* and up to 13*s.* 6*d.* is asked by some sellers.

Barrow-in-Furness.—There is a very quiet tone in the hematite-iron market, and makers are not in receipt of many new orders. The demand from all sources is narrowed down to a very small requirement, and makers find it difficult to dispose even of the make of the thirty-three furnaces which are in blast. The business with Lancashire and Yorkshire has fallen to a low point indeed, in consequence mainly of the coal-strike and of the enforced stoppage of industrial operations in various parts of the country. The general home demand is very quiet, and the local consumption is comparatively small. Very little inquiry is experienced for pig iron from continental, colonial, or foreign buyers, and it is probable that the trade during the autumn and winter months will be exceedingly quiet and small. There has been a slight increase in warrant stocks again this week, amounting to 475 tons, the aggregate of warrants now in hand in the various yards representing 79,877 tons. Makers are holding rather fuller stocks than usual, but it is expected, when the coal-strike is at an end, and work is resumed at many places throughout the country which are now at a standstill, makers will be able to reduce these stocks and complete deliveries on old contracts which are at present suspended. Prices are very easy, but are quotably unchanged. Warrant iron is quoted at 45*s.* 1½*d.* sellers net cash and 45*s.* buyers. Makers are still asking 45*s.* 6*d.* to 46*s.* per ton for parcels of mixed Bessemer numbers, net f.o.b. The business done by makers is reported at about current warrant prices. It is indicative of the position of trade and its prospects that those who usually largely speculate in warrant iron are cautious of accumulating additional stocks. Lower prices are expected. Iron ore is in small request and in limited consumption. Prices are unchanged at 8*s.* 6*d.* to 9*s.* per ton for ordinary qualities net at mines. In spiegeleisen there is not much doing. At Barrow one furnace is engaged in smelting ferro-manganese, but the demand for the ore and for spiegeleisen is very small. Ferro-manganese is still quoted at 11*l.* 5*s.* to 11*l.* 10*s.* per ton for 80-per-cent. qualities, and spiegeleisen is at 72*s.* 6*d.* to 75*s.* for 20-per-cent. qualities, net f.o.b. The steel trade is not well supported with orders. Rails are in quiet demand, and business held is not large enough to ensure the regular working of the mills during the autumn and winter months. Heavy sections of rails are quoted at 3*l.* 15*s.* per ton. Light and colliery rails are not in demand. They are still quoted at 5*l.* 10*s.* and 6*l.* respectively. In billets there is only a small business doing, prices being steady at 4*l.* 5*s.* per ton, the same quotation as for slabs, but in the latter nothing is at present being done. Blooms are also in poor demand at 4*l.* per ton. Tinplate-bars are in quiet request at 3*l.* 17*s.* 6*d.* Anticipations of better trade are indulged in when the M'Kinley tariff is withdrawn. Hoops are quiet at 6*l.* 15*s.* per ton. There is nothing doing in plates, angles, or other shipbuilding sections. The supply of coal and coke is very limited, and the output of metal, small as it is at present, is materially restricted on account of the paucity in the coal and coke supply. Shipping is still depressed. The exports of pig iron and steel from West Coast ports during the week amounted to 6,142 tons, compared with 11,261 tons in the corresponding week of last year—a decrease of 5,119 tons. The shipments up to date this year represent 556,034 tons, compared with 517,422 tons in the corresponding period of last year—an increase of 38,612 tons.

Manchester and District.—A continued holding back from buying until there is some settlement of the coal dispute is reported throughout the iron market here. For pig iron inquiries are limited to the smallest possible quantities, and prices are not more than maintained at late rates, merchants in some cases selling at considerably under makers quotations. Lancashire makers are supplying small quantities of foundry iron out of stock at about 46*s.*, less 2½, delivered Manchester. In district brands only a limited business has been doing at about 40*s.* 6*d.* for forge and 41*s.* 6*d.* to 42*s.* for foundry Lincolnshire, and 48*s.* to 49*s.* for Derbyshire foundry, net cash, delivered Manchester. With regard to outside brands, it is only in special cases that good foundry Middlesborough fetches more than 43*s.* 10*d.*, net cash, delivered Manchester, and in Scotch iron, although makers still quote about 46*s.* 6*d.* for Englinton, and 47*s.* 6*d.* for Glengarnock, delivered at the Lancashire ports, Eglinton can be readily bought, through merchants, at about 45*s.* 9*d.*, and sales of Glengarnock have been made as low as 46*s.*, net, delivered. In the manufactured-iron trade Staffordshire makers are still quoting 5*l.* 12*s.* 6*d.* for bars, delivered here, but are not in a position to book more than small quantities for prompt delivery. Lancashire makers, in isolated cases, where they are supplying out of stock, or can keep a mill or two running, are asking about 6*l.* per ton for bars, for prompt delivery. The steel trade remains very quiet, with good foundry hematites quoted at about 54*s.*, less 2½, and steel boiler-plates about 6*l.* 10*s.*, delivered in the Manchester district. In the metal market a moderate business continues to be done, with list rates maintained at the advances recently reported. A considerable weight of inquiry comes forward in the coal trade, but buyers are cautious about placing orders of any weight, most of them simply going on from hand to mouth. Only one or two Lancashire collieries have any stock now left, and for this special prices are quoted. The one large firm in the Manchester district who hold any stock have put up their prices, these now averaging 21*s.* 8*d.* for round coal at both pits and wharves, and the supply is not likely to carry them over more than another week. The one or two West Lancashire collieries who have any coal at all are asking 16*s.* to 18*s.* for engine-fuel, and 20*s.* to 22*s.* for round coal at the pit-mouth. Representatives of collieries from Durham, Cumberland, Scotland, Wales, and North Staffordshire have been offering coal very freely in this

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market, but the difficulty is to get deliveries of orders already placed, and, in addition, prices for supplies from these districts have been advanced 1s. 6d. to 2s. per ton during the week. Delivered to works in this district, ordinary steam-coal now averages 16s. 6d. to 17s., and better qualities of coal upwards of 20s. per ton. In the shipping trade supplies are now being obtained entirely from outside districts, and considerable quantities of Scotch coal are being sent into the Mersey ports.

Sheffield.—The lock-out in the coal trade continues to have a most prejudicial effect upon nearly every department of Sheffield industry. Although situated in the very heart of a great coalfield, it is only by the exercise of much ingenuity that supplies are made to reach the manufacturers of this city. Some firms are absolutely without coal, and others who have placed orders in Durham are unable to obtain supplies by reason of the blocked condition of the North-Eastern Railway Company's system. Thousands of men are only partially employed, and the situation is grave in the extreme. There is an element of hope to be found in the return to work of two or three thousand Nottinghamshire and Derbyshire miners, but this number bears so small a proportion to the army of locked-out miners that the relief afforded will be extremely slight. House and trade coal is at famine prices. A rolling-mill manager had the option of purchasing 500 tons of slack last week at 1l. per ton, but refused. In many instances much higher prices are realised for coal which is not far removed from smudge quality. The men engaged in the heavy trades have been kept at work, as well as circumstances would permit, every alternate week, but it is very probable that should the lock-out continue, most of the works in the city will be entirely idle in the course of the next month. There is very little demand for railway material, consumers preferring to wait until confidence is restored in trade before placing their orders. Some large orders for armour-plates and Government stores are in the market, and will shortly be given out.

Wolverhampton.—In view of the approaching quarterly meetings the iron trade remains in a state of expectancy, as unless some satisfactory settlement is shortly come to at the collieries the business generally transacted at these gatherings will have to be postponed. The finished-iron works are doing a steady business, and the recent rigidity of prices is maintained. The foreign trade in sheets is upheld, and the production for home consumption is sustained. Black sheets are quoted 8l. for trebles, 7l. 5s. to 7l. 7s. 6d. doubles, and 7l. singles. Galvanised corrugated descriptions of 24-w.g. are selling at 11l. to 11l. 10s. The bar-makers report a tolerably good business, though complaints are still made of the difficulty in making profits while pig iron and coal are so dear. Marked bars maintain their former price of 7l. 10s., with merchant sections at 6l. 10s., and common 5l. 10s. Barrows & Sons quote 9l. for their best scrap bars, crown B.B.H., marked "best scrap"; double-best ditto, 10l.; best chain-bars, 9l.; double-best chain-bars, 10l.; and double-best charcoal-bars, 16l. Their plating-bars are 8l; best ditto, 9l. 10s.; double-best charcoal ditto, 16l. Their "B.B.H." angle is quoted 8l.; best angle iron, 9l. 10s.; and double-best ditto, 10l. 10s. Plate-makers in this district report themselves less busy than some time ago. Boiler-plates are quoted 8l., but steel plates for similar purposes are 6l. 10s. to 7l. The steelmakers are extremely busy, and prices are firm. Steel plates for structural purposes are quoted 6l. 15s. to 7l.; steel sheets, 7l. 10s. for doubles; and billets, 4l. 12s. 6d. The pig-iron trade is quiet, and recent quotations maintained. Outside brands, which usually do a good business here, are not obtainable, owing to the blowing-out of furnaces in the Midlands. Best Staffordshire pigs are 60s. to 62s. 6d.; part-mines, 45s.; and common (cinder), 35s. to 37s. 6d. The collieries that are at work in this district are in an animated condition, and owners ask almost what price they like.

South Wales and Monmouthshire.—With one or two exceptions, there has been a very strong market at Cardiff for coal and coke. Steam-coal continues in exceedingly good demand, and, although there is naturally a little irregularity in the quotations, this is only what might have been expected after the cessation of work. Some collieries are more full of orders than others, and on the other hand some buyers are more eager than others. There is every prospect that a very healthy state of things will continue for the next few weeks. Best steam-coal has been sold as high as 15s.; second-class qualities, 14s. to 14s. 3d.; third-class qualities, 13s. 3d. to 13s. 9d.; and fourth, 13s. Household-coal is firmer this week on account of the heavy demand having sprung up consequent upon the advent of colder weather. Best households, specially selected, are as high as 16s. to 17s. f.o.b.; ordinary No. 3 Rhondda, 14s. to 14s. 6d.; Rhondda small smiths' coal, 8s. 6d. to 8s. 9d. For coke there has been only a quiet demand, the cessation of work at some of the iron and steel works having caused a falling-off in the consumption. Best foundry is 23s. to 25s.; ordinary foundry, 21s. to 22s.; best furnace, 19s. to 20s.; ordinary furnace, 16s. to 18s. In the manufactured iron and steel trades the depression still continues, without an immediate prospect of improvement. Certainly there are buyers of finished material ready to contract for 1894 at present low prices, but this probably is the outcome of a belief that prices cannot go any lower, and if a rise should come an advantage would be gained. Steel rails are quoted at 3l. 15s. to 4l. per ton heavy sections, and medium 4l. 15s. to 4l. 17s. 6d. Bessemer tinplate-bars have been sold at 4l. 5s. to 4l. 10s. per ton, delivery at buyers' works. Tinplates are depressed, Bessemer cokes, I.C. 14 by 20, having fallen to 11s. There is a fair quantity of iron ore coming forward. Rubio ore is quoted at 11s., 50-per-cent. basis, c.i.f. Cardiff and Newport. The exports of iron ore from Bilbao during the past week reached 63,757 tons, as compared with 80,928 for the previous week. The output from January 1 to September 23 was 3,117,517 tons, as compared with 2,846,028 tons for the same period of last year. Freight from Bilbao to Cardiff is 4s. 6d. to 4s. 9d. Coal-chartering is exceedingly brisk, the following being the most recent transactions:—Cardiff to London, 5s. 3d.; Port Said, 5s. 9d.; Barcelona, 9s. 6d.; St. Nazaire, 6½f.; Constantinople, option Piræus 5s. 6d., option Sulina 5s. 10½d. (clean); Algiers, 8f., option Marseilles 7¾f.; Genoa, 5s. 9d. (clean); Aden, 9s. 6d. (clean); Malta, 4s. 3d.; Havre, 5s. 9d; Bordeaux, 6¼f.—From Swansea it is stated that the pig-iron market has developed a slight reduction upon last week of about 6d. per ton, and in the meanwhile business has been very quiet, there being scarcely any to be reported. Iron and Steel.—There has been a continuous falling-off in the demand for finished iron and steel. Tinplates.—The prices remain unchanged, and until the Silver and Tariff Bills have been finally settled no improvement in the American trade can take place. We have been informed upon good authority that the termination of this business will not be brought about until towards the end of the year, when a better state of things is to be expected. The shipment of plates is very small, but with the list of vessels now loading and expected to arrive, this shortness will be soon made up. Welsh Bars.—4l. 15s. to 4l. 17s. 6d.; angles, &c., at usual extras, f.o.t. at works. Sheet Iron.—Singles, 7l. to 7l. 10s. Steel Sheets.—Singles, 7l. 10s. to 8l. 10s., with the usual extras for the higher gauges. Bessemer Steel.—Tinplate-bars, 4l. 7s. 6d. to 4l. 10s. Siemens Tinplate-bars.—Best, 4l. 10s. to 4l. 17s. 6d.—all delivered in the district, cash, less 2½ per cent. Makers' Quotations for Tinplates.—Bessemer-steel coke, 11s. to 11s. 3d.; Siemens (coke finish), 11s. 3d. to 11s. 6d.; ternes, per double box, 28 by 20 C., 21s., 22s., to 23s.; best charcoal, 12s. 3d. to 13s. 6d., according to finish of brand; wasters, 6d. to 1s. per box less than primes.

"Questions and Answers," being replies to questions of general trade interest, appear on page 606 of this issue, and will henceforth be a regular feature of the paper so long as our readers ask for that class of information. All questions are answered by experts—that is to say, legal questions by a barrister, hot-water work queries by the best authority we know, plumbing questions by a leading sanitary man, and so on throughout, so far as is possible.

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THE METAL MARKETS.

OUR METAL MARKET-BAROMETER.

Copper, Chili Bars, Spot. Prices	Last Week	This Week	Tin, Straits, Spot. Prices	Last Week	This Week	Lead, English. Prices	Last Week	This Week
£ s. d.			£ s. d.			£ s. d.		
43 2 6			81 0 0			10 15 0		
43 0 0			80 15 0			10 12 6		
42 17 6			80 10 0			10 10 0		
42 15 0			80 5 0			10 7 6		
42 12 6			80 0 0			10 5 0		
42 10 0			79 15 0			10 3 9		
42 7 6			79 10 0			10 2 6		
42 5 0			79 5 0			10 0 0		
42 2 6			79 0 0			9 17 6		
42 0 0			78 17 6			9 15 0		
41 17 6			78 15 0			9 13 9		
41 15 0			78 12 6			9 12 6		
41 12 6			78 10 0			9 10 0		
41 10 0			78 5 0			9 7 6		
41 7 6			78 0 0			9 5 0		

Copper.—A quiet uneventful week has passed, with lower prices on the whole. On September 22 a moderate business was remarked at 43*l.* for three months, and 42*l.* 17*s.* 6*d.* for November 24. The afternoon's transactions were very limited with cash at 42*l.* 15*s.* During the day about 350 tons were sold. The tone of the opening market on Monday was rather easier, and closing values were—cash 42*l.* 10*s.* to 42*l.* 11*s.* 3*d.*, and three months 42*l.* 15*s.* to 42*l.* 16*s.* 3*d.* No business was reported in the afternoon. About 250 tons were estimated to have changed ownership during the day. On Tuesday morning a drop of 5*s.* in cash was experienced, and an equal amount in forward deliveries. In the afternoon prices ruled at 42*l.* 7*s.* 6*d.* for three months, closing from 41*l.* 18*s.* 9*d.* to 42*l.* Cash fetched from 41*l.* 13*s.* 9*d.* to 41*l.* 15*s.* About 600 tons represented the day's sales. A recovery set in on Wednesday morning, and values for cash were 41*l.* 17*s.* 6*d.* to 41*l.* 18*s.* 9*d.*, whilst three months was from 42*l.* 3*s.* 9*d.* to 42*l.* 5*s.* Still firmer were the afternoon prices, and three months increased to 42*l.* 8*s.* 9*d.* to 42*l.* 10*s.*, with cash at 42*l.* to 42*l.* 1*s.* 3*d.* Nearly 500 tons sold during the day. Refined and manufactured sorts are quiet at 46*l.* to 46*l.* 10*s.* tough, 47*l.* to 47*l.* 10*s.* best selected, 54*l.* strong sheets, 52*l.* 10*s.* India sheets, and 4⅝*d.* yellow-metal sheets. On Thursday prices were slightly easier at 41*l.* 16*s.* 9*d.* for cash, and 42*l.* 3*s.* 9*d.* for three months.

Tin.—This metal has been quiet during the past week, with only small sales. On September 22, in sympathy with copper, values rose slightly, and cash closed at 80*l.* to 80*l.* 2*s.* 6*d.*, with an extra 2*s.* 6*d.* for three months. A very small business took place in the afternoon at unchanged rates. Only 40 tons were disposed of during the day. On Monday about 60 tons sold at Saturday's rates, with a very steady market. On Tuesday morning a larger business was done at 80*l.* for December 18, 79*l.* 15*s.* cash and December dates. In the afternoon an easier tone prevailed, with cash from 79*l.* 5*s.* to 79*l.* 7*s.* 6*d.*, and three months 2*s.* 6*d.* above these figures. About 150 tons were estimated to have been sold. On Wednesday morning a moderate business took place at 79*l.* 12*s.* 6*d.* to 79*l.* 10*s.* cash, and 79*l.* 15*s.* three months. In the afternoon an all-round drop of 2*s.* 6*d.* was reported. Nearly 150 tons were sold during the day. English is quoted 85*l.* to 85*l.* 10*s.* On Thursday 79*l.* 5*s.* was accepted for prompt foreign metal, but three months was rather stronger at 80*l.* 2*s.* 6*d.*

Tinplates.—*London.*—A quiet market has to be reported, with no extra demand. Prices, consequently, remain unaltered. *Liverpool.*—This market is very quiet and dull, there is little or no business doing, and prices remain unchanged, quotations being 11*s.* to 11*s.* 3*d.* for C. 14 by 20 Bessemer cokes, and 11*s.* 6*d.* basis for odd sizes, and 3*d.* more for Siemens, f.o.b. Wales. Charcoals are quoted 12*s.* to 13*s.* for C. 14 by 20 Bessemer, and 12*s.* 6*d.* to 13*s.* 6*d.* for Siemens, and 14*s.* to 17*s.* 6*d.* for best charcoals, f.o.b. Wales. Ternes, 21*s.* to 22*s.* 6*d.* for C. 28 by 20 Bessemer, and 23*s.* to 25*s.* 6*d.* for Siemens charcoals, f.o.b. Wales.

Lead is dull, with soft foreign at 9*l.* 15*s.*, and English at 9*l.* 17*s.* 6*d.*

Spelter is quiet at 17*l.* to 17*l.* 2*s.* 6*d.* for ordinaries, and 17*l.* 5*s.* to 17*l.* 7*s.* 6*d.* for specials.

Antimony fetches from 38*l.* to 38*l.* 10*s.*

Quicksilver is quiet at 6*l.* 10*s.* firsts, and 6*l.* 8*s.* 6*d.* seconds.

TRADE IN GERMANY.

SOME interesting figures have been published by a German journal in disproof of the assertion that the Westphalian coke syndicate, by selling its fuel at specially low prices to neighbouring countries, had greatly stimulated the importation of foreign pig iron into Germany, to the detriment of the native manufacturers. It is admitted that (according to the official returns) the importation of pig iron for the first seven months of 1893 shows a substantial increase—viz., 133,743 tons, against 99,494 tons in 1892, and 123,112 tons in 1891. This augmentation for the current year of 34,000 tons is chiefly due, however, to larger purchases from England, that country supplying up to the end of July 116,800 tons, against 81,359 tons in 1892; whilst from France (the country supposed to have been specially favoured by the Westphalian coke syndicate) the arrivals were 9,518 tons, as against 5,529 tons—an increase of 4,000 tons only. Against this augmented import from England and France of some 39,000 tons must be placed a falling-off in the shipments from Spain, Sweden, Austria, and Belgium of about 5,000 tons. It is noteworthy that England, which sent by far the larger portion of the increased quantity of pig to Germany, is not a consumer of German coke, so that the export price of the Westphalian syndicate has really had very little to do with the growth of the import business in crude iron. Notwithstanding the larger introduction of foreign pig iron into Germany, the metallurgical trade of the country is still expanding, the exports of material in a manufactured shape showing steady expansion. Thus, during the period under review, the exports of angle iron rose from 45,786 tons in 1892 to 64,319 tons in 1893, wrought iron in bars from 113,446 tons to 137,771 tons, and plates and sheets from 34,905 tons to 39,121 tons. In rails alone is there a falling-off—viz., from 65,670 tons to 53,314 tons, due to the extraordinary depression in prices for this class of steel, and to the severity of the competition from other countries.

Taken in connection with the foregoing subject, it is satisfactory to note that the production of pig iron in the empire during August reached 407,095 tons, as against 401,163 tons in August, 1892, and 401,046 tons in July last. From January 1 to August 31 this year the output was 3,135,679 tons, against 3,191,183 tons in the first eight months of 1892.

The Saxony State Railway Department has placed its rail requirements for the next twelve months with two local concerns, the total, aggregating some 18,000 tons, being divided between the Marienhütte, in Cainsdorf, and the cast-steel works at Dohlen. The price is stated to be 122m. per metric ton, delivered at Zwickau.

The spelter market in Silesia, so far as the home trade is concerned, continues to improve, and this in face of unfavourable reports from London. The price of 17m. and 17.10m. is being freely paid for first quality, whilst for seconds some important contracts have been made for October delivery on equally good terms. The export inquiry for rolled zinc continues active, but on home account, owing to the slackening of building operations, rather less is now doing

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HARDWARE,

CUTLERY, TOOLS, IMPLEMENTS, AND MACHINERY.

LONDON.

General Remarks.—With a falling temperature the call for heating-appliances naturally assumes greater activity, and both in gas and oil heating-stoves manufacturers are busy in completing preparations for the requirements of the winter trade. Already in certain lines of oil and gas stoves the demand is fairly brisk, and orders are coming forward in steady fashion. A popular notion prevails that the hot summer will be followed by an exceptionally hard winter, and with the prospects of coal keeping high in price the outlook for oil-stoves is certainly excellent. At any rate, more than one firm are counting upon such a demand, and whatever may be in store for us there evidently seems to be no lack of enterprise in preparing for eventualities.

Lighting and Heating Apparatus.

The Albo-carbon Light Company, 28 Hatton Garden, E.C., have completed their preparation of specialties for the season, and in view of the necessities of the trade have removed their warehouses and factory to City premises at 2 and 3 Bleeding Heart Yard, E.C. The firm have introduced several novelties in cluster and single lights, one of the latter being illustrated in fig. 1. The designs may be

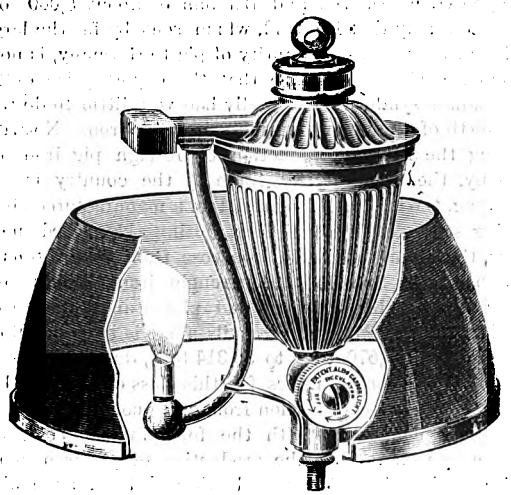

FIG. 1.

regarded as apt combinations of the albo-carbon principle with tasteful finish and elegance of form. A special feature for the season is the introduction of enamelled clusters and fittings in all shades of colour, the idea being that nickel-plated or bronzed gasfittings do not always meet the desires of those who seek to harmonise such articles with furniture and other surroundings. The aim of the firm, consequently, is to supply goods enamelled with deep, rich, or delicate tints to suit the tastes of buyers. In this respect the samples on hand appear to fulfil all the conditions that are claimed for them, and evidently the movement is in a direction which opens up a large and varied choice for those who favour the albo-carbon system of lighting. The article shown in fig. 1 is styled by the firm the new "Corinthian," one-light, and is arranged with button regulator as well as on the superheating principle. The price being favourable to buyers, a good run is expected with it.

The Deimel Light Company (Limited), 86 Gray's Inn Road, W.C., anticipate an influx of new demands for their specialty in gas-lighting, and as there has been a steady growth of business since the introduction of the "Deimel" gas-lamp, it seems but reasonable that such expectations should be fulfilled. Detailed improvements have been effected in these lamps, and careful preparations have been made to have a plentiful supply on hand so as to be ready for any emergency. As the illustration (fig. 2) will show, the

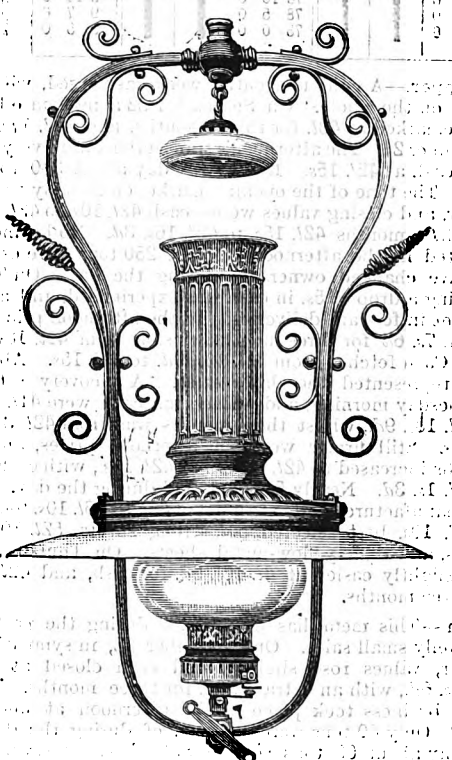

FIG. 2.

appearance favours the saleability of the article. The firm, however, claim much more than elegance of form. With the introduction of the burner under the flame, it is declared to be much less likely to carbonise or choke, and is in all respects free from many of the objections which would arise from the direct impact of the flame if the burner were over it. One of the merits of the "Deimel" lamp is the readiness with which it can be attached to existing gasfittings. All the parts of the lamp being interchangeable, the facility of renewing any portion without delay or the assistance of a skilled expert helps to make the apparatus a favourite. The "Deimel" lamp is made in two sizes, the No. 1 burning 9½ feet of gas per hour and No. 2 6 feet per hour. For outside lighting the larger size is used, and when fitted with windproof casing is declared to be a very successful method of gas-lighting, and highly appreciated where it is in use. Already numerous Government departments have adopted these lamps, and after a six months' test it is stated that the officer commanding at Aldershot has recommended them for

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army purposes. The firm also supply a shop-window reflecting-lamp which is worthy of notice.

Brendel & Loewig, whose London agents are C. F. Bourne & Co., 62 Holborn Viaduct, E.C., have brought forward for the season several handsome designs for petroleum-lamp stoves, among which is the pattern shown in fig. 3. The "Empire" stove is the pattern illustrated, the

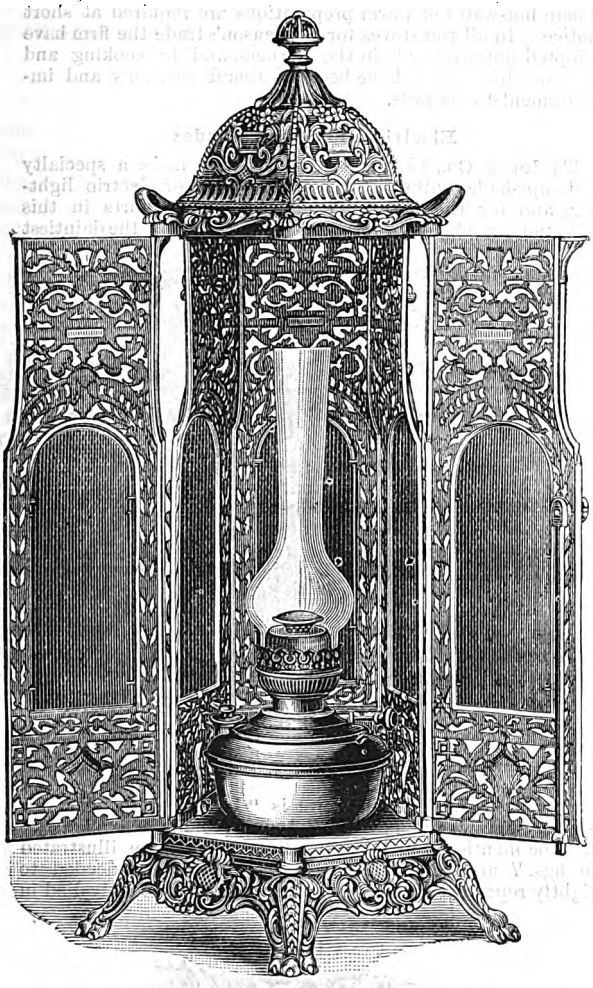

FIG. 3.

design and finish being such as to prove attractive at the first glance. It is claimed to be safe, cheap, and good. Further, it is declared to be exceedingly useful for heating halls, offices, greenhouses, bedrooms, or any apartment where a handsome lamp-stove is a desideratum. The stove is fitted with a 60 or 100 candle-power central-draught lamp of the "Blitz" pattern, and stands 34 inches high, with a diameter of 18 inches. As already mentioned, the ornamental character of the stove is apparent, but the chief charm of the article is its finish, the process of fire-gold used in conjunction with the enamel being a special feature of a most important character. The gilded portions are done with real gold fired as above stated, and consequently the durability of the decoration is materially enhanced. The London agents for the manufacturers speak very confidently of the methods employed in the finish of these goods, they being of opinion that the stoves will sell very readily.

G. B. Kent & Sons, 11 Great Marlborough Street, W., have taken up a specialty in burning-off lamps, styled the "Victory." The advantages claimed for it in removing old paint and for performing other functions are said to be worthy of notice and a decided boon to the trade. The "Victory" lamp is illustrated in fig. 4. The outside dimensions are 10 inches high, 4½ inches wide, and 9 inches from handle to nozzle. It is stated by the firm to be the best paint-removing lamp in the market, as it will act even in a gale of wind, and there is nothing about it to get out of order. The lamp is made of copper throughout, and is very durable. The

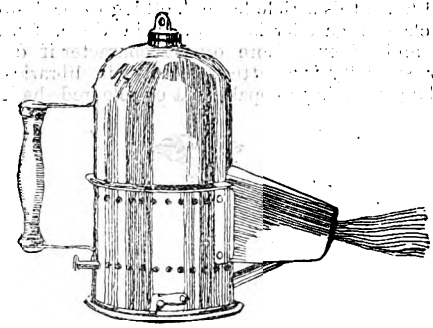

FIG. 4.

flame is intensely powerful, and therefore gets through a lot of work in a short time. Taking the merits of the lamp all round, and judging from the reports of experts respecting it, the firm have apparently got hold of a genuine and saleable article.

Mr. Thomas Smart, Dudley, has supplied his London

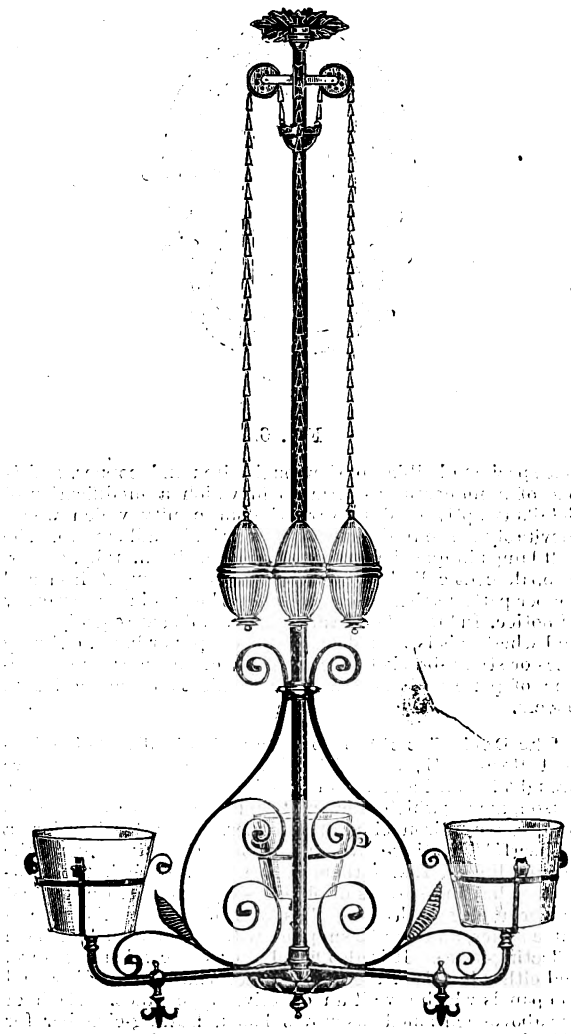

FIG. 5.

agent, Mr. C. T. Price, 9 Charterhouse Street, E.C., with some new patterns in gaseliers, brackets, and hall-lamps, which

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form an interesting portion of his stock prepared for the season's trade. Fig. 5 shows a gaselier made in wrought iron and copper, which well represents the style and type of design adopted for some of the latest productions. In general finish this article leaves nothing to be desired. The same class of gaselier is supplied in three, four, or five lights, and of even more ornate character if desired. A further specialty is a pattern for use in libraries, with a central light, having an opalescent or coloured shade. Fig. 6

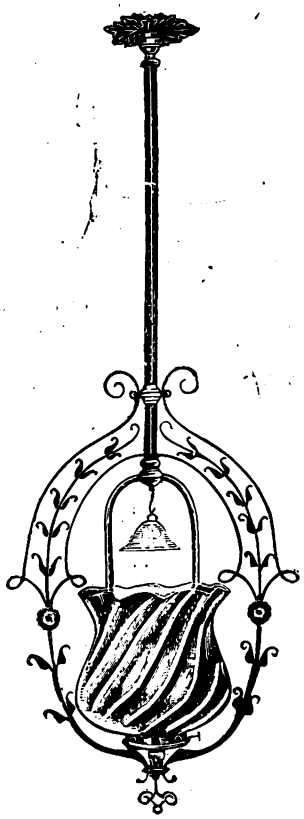

FIG. 6.

is a specimen hall-lamp of wrought iron and copper, and is one of a numerous assortment in which a modification of details is aptly used to vary the uniformity which would inevitably ensue if the one type was rigidly adhered to. The hall-lamps in question are supplied with citron, ruby, amber, or opalescent cylinders, and besides the wrought iron and copper patterns there are sundry new designs in brass worthy of notice. In brackets the variety and number are equally good, and whether it is wrought iron and copper or brass, ordinary sizes or stump-brackets for landings or passages, the collection of patterns is such as cannot fail to be attractive to buyers.

The Davis Gas-stove Company (Limited), 200 Camberwell Road, S.E., are fairly active with orders, and have brought forward a series of gas heating appliances for the season, among which a new-pattern heating-stove, an asbestos burner, a cast-iron circulating-boiler, a register interior, a "Cheerful" heating-stove, and an oval heating-stove are the leading lines. Taking them in the order named, the new-pattern heating-stove is of oblong shape, mounted on a cast fender of elegant design. This type of gas-stove is made in three styles, and can be supplied with asbestos fuel or as a reflecting-stove. It is also fitted up as a condensing-stove, and either in this or the reflecting form has stained-glass and tile panels which give it an effective appearance. Each of the above-mentioned gas-stoves has a heating-chamber for diffusing warm air into the apartment, and the arrangement is such that the heated air does not come into contact with the gas. The asbestos burner is arranged so that when part is turned off the remainder is at full power, thus preventing the risk of lighting back, as frequently happens when a gas-fire is partially turned down. By adopting this method the results are practically the same economically as if the whole burner were turned low. When a gas-fire is burning all night this is a matter worth consideration. The register interior is practically on the same principle. The "Cheerful" gas-stove is provided with a boiler-burner on top, and is exceedingly convenient for nurseries, sick-rooms, and places where hot-water or warm preparations are required at short notice. In all the stoves for the season's trade the firm have adopted improvements in the burners, and in cooking and heating stoves there have been all round revisions and improvements of details.

Electric and Lamp Shades.

Taylor & Co., 19 Hatton Garden, E.C., make a specialty of lamp-shades suitable for gas, petroleum, or electric lighting, and for the season's trade the latest efforts in this direction are choice in form and colour. One of the daintiest

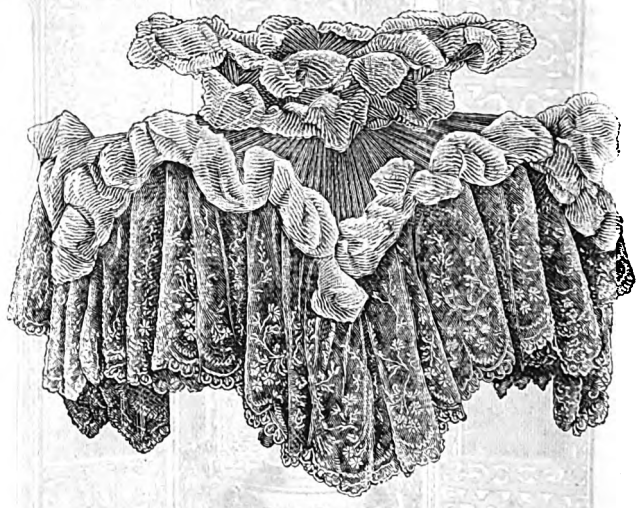

FIG. 7.

and richest of the new patterns is "La Marquise," and for stylish effect combined with rich deep colour the "Poppy" may be mentioned as a leading line. These are illustrated in figs. 7 and 8, and, although the colours are needed to rightly represent them, a good idea of the skill embodied in

FIG. 8.

their form and construction can be gathered from the sketches. These goods are handsome and artistic in every sense of the word, and doubtless the firm will find patterns of this class run well during the present season. Among last season's patterns, the "Dorothy," "Grande Duchesse," "Empress," "Regent," and "Admiral" maintain a good share of favour, and with the adoption of details, such as the rainbow chiffon, like that which adorns "La Marquise,"

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there seems no reason why the demand should not continue. The firm also do an extensive trade in mica for both export and import, their *clientèle* including many industries outside the lamp trade. In scientific and electrical manufacturing circles mica is an important item, and the firm evidently intend being as up to date in this branch of their business as they are in lamp-shades. The supplies include sheets suitable for stoves, discs, smoke consumers, candle-shades, and numerous shapes specially prepared for sundry manufacturing and scientific purposes.

Nevada Silver and Plated Goods.

Daniel & Arter, 62 Holborn Viaduct, have brought out some new patterns in electroplate, "Nevada" and nickel silver, and a choice assortment of oak-mounted goods. Among the last-named are a large collection of liqueur-frames in numerous sizes, considerable pains having evidently been taken to produce a style of article which will find favour both as regards price and quality. The firm guarantee that everything in these goods is English, locks of best make and glass-ware included. As regards design and all-round finish, the goods only need to be seen to be appreciated. A fine group of claret-jugs form a pleasing part of the display, one of which is shown in fig. 9, and alongside of these is an equally brilliant array of butter-dishes with covers, one of the patterns being represented in fig. 10. Within a handsome

FIG. 9.

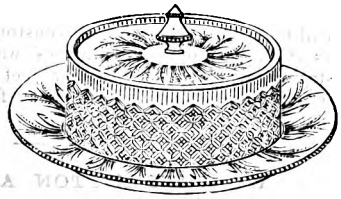

FIG. 10.

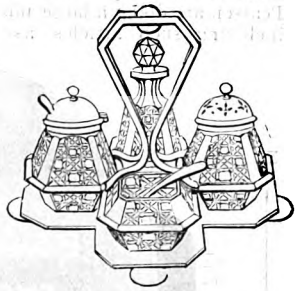

FIG. 11.

show-case are on view many interesting specimens of the designer's skill, and they include tea and coffee sets, jams, salts, biscuit-boxes, salad-bowls, spirit-kettles, cruets, and a host of useful articles for which there is a large and steady demand. In cruets the variety is sufficiently attractive to satisfy the most fastidious, and include charmingly dainty patterns in dinner, luncheon, and breakfast sizes. One of the luncheon patterns is illustrated in fig. 11, and, as in the goods before mentioned, the glass is best English-cut. In looking around the show, which has been prepared to meet the requirements of the winter trade, one cannot help being struck with the combinations of Doulton ware, gold-edged jams, hand-engraved biscuit-boxes, five-o'clock fancy variety tea and coffee sets, Queen Anne pattern tea-services, and the various hues of crystal and coloured glass that are blended so happily with bright metal mounts—the whole forming a collection clearly demonstrating the solicitude with which the firm cater for the trade. A word must be added as to the "Nevada" silver and electro "Nevada" spoon and fork trade. This may be said to be the corner-stone of Daniel & Arter's business, the department being one for which the firm have obtained a world-wide reputation. Nevertheless, the expansion into art-work, as shown in the choice collection of samples on view, evidently means business beyond spoons and forks in a very practical fashion.

BIRMINGHAM.

Arms and Ammunition.—In common with most of the other luxury branches of the Midlands the sporting-gun trade has suffered a good deal lately from the general trade depression, and especially the state of the landed interest. Australia has been a growing market of late years for English birding-guns, and it has compensated to some extent for the mischief done to our American trade by the M'Kinley tariff. Unfortunately, the Australian colonies are under a financial cloud just now, and our export of guns to that part of the world is almost nominal. On the other hand, there has been a considerable revival of demand for South Africa, India, and other Eastern markets; and though the revolutionary troubles in South America make sporting at a discount there, some good orders have lately been booked for military rifles for that part of the world. There is naturally a good deal of secrecy about orders of this description, which are usually placed through indirect channels. But there can be no doubt that there has been a considerable reduction lately of old stocks of Martini-Henrys, and that several makers have been busy on conversions. Of course the bulk of the orders for South America find their way to New York, where it is generally understood the headquarters are to be found of the various revolutionary movements which from time to time relieve the monotony of existence in the South American States. The threatening condition of affairs in Mashonaland has lately led to a rather active demand for rifles for South Africa and the African West Coast. Although flint guns are neglected, there is a fairly brisk inquiry for military rifles. Makers of high-class sporting-guns have not suffered so much from the depression of trade as their second-class competitors. In some cases, indeed, they report that they have done a better trade this summer than for the corresponding period last year; but orders are now beginning to slacken off, and even the most favoured gunmakers are a little apprehensive as to what next year may have in store for them. There can be no doubt that the prolonged sitting of Parliament this year has made the sporting season a very late one. It is to be hoped, however, that the short recess will not be without some beneficial effect upon the gun trade, if only for the sake of the large number of operatives who are now dependent upon the sporting branch. Whilst Enfield and Sparkbrook were in fairly full operation up to a year ago, there was no lack of work for skilled operatives in the military branch. Since the reduction of those establishments, however, large numbers of workpeople have been thrown back upon the sporting branch, where employment, unfortunately, is just now rather scarce. It is significant of the change which has come over our relations with the United States that only two Birmingham houses have thought it worth their while to exhibit at Chicago—viz., Mr. W. W. Greener and W. C. Scott & Son. Both these firms continue to do a good trade in the United States in high-class hammerless and other sporting guns. Mr. Greener reports that his returns this season have been quite up to those of last year, but that new orders are now becoming very scarce, and that the outlook for next year is uncertain and unsatisfactory. On the Continent also he is doing an excellent trade in high-class guns, and his home orders also have been very satisfactory. The Westley-Richards Company, who also do a considerable business with the United States in their Anson-Deeley hammerless gun, make a favourable report of their season's experience, also in this country and in South Africa. Powell & Son appear to have been exceptionally favoured of late, having been kept going throughout the season up to the full limits of their productive powers. The firm devote themselves almost entirely to high-class birding-guns for the leading home, colonial, and foreign markets, and a large proportion of their orders this season has been for members of both Houses of Parliament. Mr. Lincoln Jeffries, Steelhouse Lane, the well-known gun, rifle, and revolver manufacturer, reports business rather dull outside certain special lines. He is stimulating demand, however, with a new appliance, which should be especially popular among young sportsmen. It is called the adjustable gun-barrel grasp—H. S. Eyre's patent (page 602). This invention consists of a movable handle that can be instantly fixed to guns and other firearms, affording an easier and safer hold for the left hand. The usual mode of holding firearms is, in Mr. Jeffries' opinion, a faulty one. The left hand, which chiefly directs

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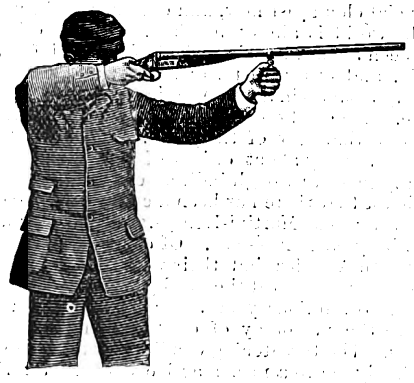
and carries the weight of the weapon, has no very secure hold upon it, whilst the right hand, which should be free to manipulate the triggers, is often filled with a "pistol grip," which is supposed to steady the gun, though it fetters the hand. Among the advantages claimed for this invention are the following:—A clear sight over the barrels without obstruction by the fingers of the left hand, which renders the aim more certain and steady; diminution of the recoil on the right shoulder, which is of considerable importance when

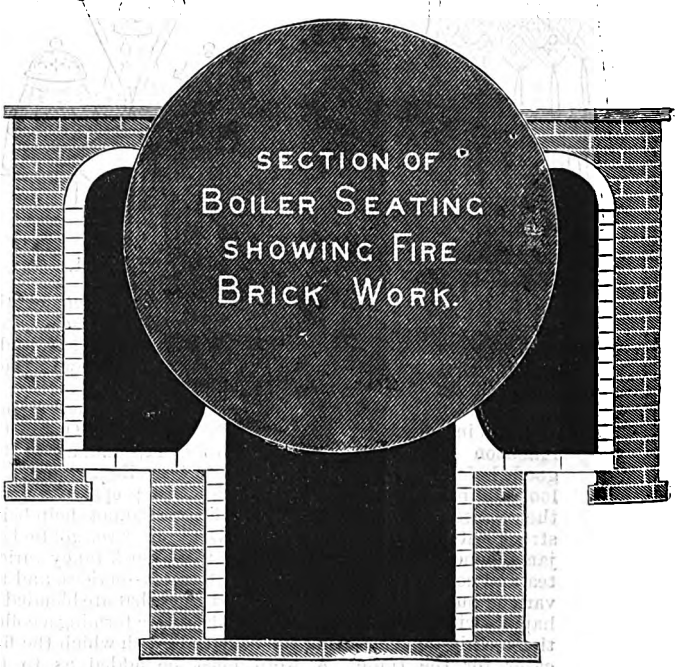


using heavy charges; and avoidance of the annoyance caused by handling cold barrels in winter or barrels heated by over-firing. The risk of injury to the left hand by bursting barrels is also greatly diminished by the use of this grip, which will be found of great assistance, moreover, to indifferent "shots" by increasing the accuracy of the aim. Mr. C. G. Bonehill makes a favourable report of his experience in machine-made sporting guns, the demand for which is constantly growing, both abroad and at home. In the cheaper kinds of hand-made sporting guns suitable for the American markets, however, business just now is almost at a standstill. Mr. Bonehill has practically given up the manufacture of this class of guns, and is devoting himself to the home and foreign trade in machine-made and other guns of superior grade. He is very busy just now for Japan and other Eastern markets on merchant orders for guns. With the Continent, also, he is doing a good trade in his "Belmont" and "Challenge" guns. In sheep-shears and cycles Mr. Bonehill is also fairly busy. T. Bland & Son make a qualified report of business, which reaches them chiefly through their London house. In "Express" double rifles and the better class of sporting guns they continue well employed, chiefly on home account; but their "Keeper" and other guns of the lower grades are in rather limited request. The Midland Gun Company, who also depend principally on the home trade, report business, except in a few special lines, rather quiet. Enos James & Co., who depend to a great extent upon the Australian and American markets, are experiencing a quiet time. This is the condition of things also with Ward & Son, and Hollis & Sons, both of whom have lately added a good deal to their productive power. Mr. F. Williams is moderately busy in various kinds of breech and muzzle loading guns, and a similar report may be made of Mr. Charles Smith. In the military department there is not much doing at the local Government factory, but the Birmingham Small-arms Company are well employed still on old contracts for magazine-rifles, shells, and ammunition. The company lost five months of their last working year in changing gauges from Mark 1 to Mark 2; but by increased activity during the remaining seven months they nearly recovered lost ground, and were able to divide 15 per cent. They are steadily, if not fully, employed just now on the new contract, which will keep them going up to 1895. They are also doing well with their new sporting magazine-rifle lately described, as well as in Martini-Henrys, but are somewhat inconvenienced through scarcity of steel consequent upon the coal-strike. In their metal department they are pretty fully employed both on shells and cartridges. G. Kynoch & Co. (Limited) continue to make steady progress with their sporting ammunition, and experience a constantly growing demand for their "Perfect" metallic case, "Perfectly Gas-tight" case, and "Grouse" case. They are well employed also on Government contracts for shells, nickel bullets, and quick-firing ammunition. Webley & Son are busy on machine-made revolvers for the army, but are only moderately employed in their sporting department. Eleys (Limited) are doing well both in sporting and military ammunition, and the King's Norton Metal Company (Limited) are fully employed on orders for cartridge-metal, shell-cases and nickel bullets. Thomas Wild & Co., who make a special feature of hammerless ejectors, are doing well in every description of sporting guns and implements, and are also rather busy in saloon-rifles, and air guns and pistols, as well as in various kinds of sporting and military ammunition.

New Premises.—An imposing depôt and showrooms for watches, clocks, jewellery, plate, and bullion have been newly opened in Great Hampton Street, Birmingham, by I. S. Greenberg & Co., the well-known importers, dealers, and manufacturers, Vyse Street. The premises, which are situated at the junction of the main thoroughfare with Hall Street, and were formerly occupied by Lloyd's Bank, have been remodelled and specially adapted for the new business. There is a spacious, well-lighted shop or warehouse on the ground floor, fitted up with cases and shelves well stocked with bronzes, clocks, timepieces, watches, jewellery, and curios of every kind, with offices and strong-room at the back. The showroom, of equal dimensions, is situated on the floor above, and other blocks of work-rooms and warehouses, packing-room, &c., are situated in the rear, with frontages to Hall Street. A large clock surmounts the entrance, and the windows are effectively and attractively dressed with watches, bronzes, and jewellery. The depôt will be a great convenience to customers visiting Birmingham, as it is within a few minutes' walk of Snow Hill railway-station, whereas the Vyse Street premises are somewhat remote, and do not afford space for the proper display or inspection of the stock.

WOLVERHAMPTON AND DISTRICT

The Stourbridge Firebrick Trade.—Business in this branch of industry continues moderately active. E. J. & J. Pearson are doing a large miscellaneous ironmongers' trade, including such articles as fire-tiles, fire-lumps, tiles for



register-grates, and firegrate-backs. They are also producing in great quantities bricks for range and stove makers, for kitchen-backs, and other similar purposes. The firm report that the summer-season business with the range and grate makers was a fair one, but their experience just now is no exception to the general quietude. They are, however, receiving inquiries and a few preparatory orders for the

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usual winter-season demand for domestic firegrate requirements. The firm make a specialty of blocks for boiler-seatings and of flue-covers. These specialties are in great demand. Our illustration shows their use. Boilers fixed in the manner shown have effected great fuel-economy. The blocks, &c., are made in different patterns to suit the requirements of different engineers. The white portion in the illustration shows the firebrick-work, and the blocks are seen on each side forming a seating for the boiler. The firebrick trade, taking it altogether, has been quieter just lately than a year ago, but the firm have had all along a good demand for the specialties mentioned. Mr. William Mobberley, Victoria Fireclay and Brick Works, Pensnett, near Dudley, and the Victoria Blue Brick and Tile Works, Greets Green, West Bromwich, has his share of work in firebricks, gas-retorts, burrs, quarries, Bessemer tuyeres, runners and centres, stoppers and nozzles, boiler blocks and covers. John Hall & Co., Stourbridge, keep fairly engaged in best firebricks, including special qualities for blast-furnaces, iron and steel works, hot-air stoves, coke-ovens, railways, &c.; also on boiler-seating blocks and flue-covers. The firm are proprietors of glasshouse, pot, crucible, and other Stourbridge fireclays. Of glazed bricks, both white and coloured, they make large quantities. Harris & Pearson, Stourbridge, are fairly busy in every description of fireclay goods for ironworks, steelworks, gasworks, blast-furnace linings, and also goods for grate and stove manufacturers. Amongst other items of which they make a specialty are hexagonal bricks for Cowper's patent hot-blast stove, Ford & Moncure's stoves, and other types of stoves. Another special line with them is bricks for boiler seating and covering. These the firm largely export to various parts of the world, principally to India, whence they have recently received some satisfactory testimonials. The firm raise their own clay, and they claim that they pay special attention to the selecting of it. They supply bricks made of special clay for glassworks, and they also manufacture glasshouse pots. The goods they make include also a variety of glazed bricks suitable for numerous purposes.

Shovels, Spades, &c.—A firm who are able to make a very satisfactory report of the state of trade is G. W. Potts & Co., Hayes Works, Blackheath, Staffs. During the last six years their trade has grown so fast that they have not been able to cope with the demand, more particularly in stamped cast-steel socket-shovels, locomotive shovels, American-pattern shovels, and plated shovels. The firm have therefore erected extra shopping, engaged additional hands, put down a new 18-horse power "Otto" Crossley's gas-engine and new machinery throughout for the manufacture of the above-mentioned articles. This will increase their output by about two hundred and fifty dozens per week.

SHEFFIELD.

Silver and Electroplate, &c.—W. Hutton & Sons, West Street, are just now busily employed in bringing out novelties for the coming winter season. A large order for silver trays has recently been completed for an Eastern monarch—several of these weigh 300 oz. each. The decoration of these articles is very effective, an acanthus-leaf folded over the edges of the trays having a remarkably pretty appearance. The centres are elaborately engraved with a graceful floral pattern. Among the articles recently manufactured is a large hunt-bowl in the Louis Quatorze style. A shield in the centre represents three horses in the act of jumping a stiff fence. This piece of plate is intended to grace the mansion of a master of foxhounds. Black Forest bottles for spirits, mounted in silver gilt, are coming into use very extensively, and the firm are turning out large quantities of these goods. A finely-chased military trophy, containing views of a mountain battery scaling the heights and a battery in action, is a fine example of Sheffield art workmanship. Ladies' toilet-ring stands in silver are selling very well at present, and silver candlesticks are also in great demand. One of the latest designs promises to become a feature of the present season. Silver cups and saucers, the inside of the cups lined with china, and the silver shells richly chased in Georgian and Louis patterns, have a very beautiful appearance. Punch-bowls, liqueur-trays, and bon-bon or sweetmeat dishes, pierced in various designs, are finding a ready market. An epergne of the latest pattern, containing a number of prettily-arranged hanging and fixed baskets, with representations of birds of paradise, is one of the handsomest things of the season. Wine-coolers, containing representations of spring, summer, autumn, and winter, are made by this firm in large numbers. Toilet-services of solid silver are now being placed upon the market by W. Hutton & Sons. Wash-hand bowls, large ewers, sponge-dishes, soap-dishes, comb-boxes, curling-tongs, &c., are fashioned in silver, and have a decidedly rich effect. Atkin Brothers, Matilda Street, are well employed upon their various specialties. W. W. Harrison & Co., Rockingham Street, report that trade is generally quiet. They are, however receiving a fairly large number of orders for goods of special manufacture. Southern & Richardson, Doncaster Street, are well employed. James Dixon & Sons, Cornish Place, are doing a large trade, the season for novelties having set in. Some fine specimens of art work are being placed before their customers. Parkin & Marshall, Furnival Street, find that business keeps up to the same level as in previous years. The firm's special productions continue to meet with a quick sale. Boardman, Glossop & Co., Pond Street, have just designed and manufactured a luncheon-tray, with centre for

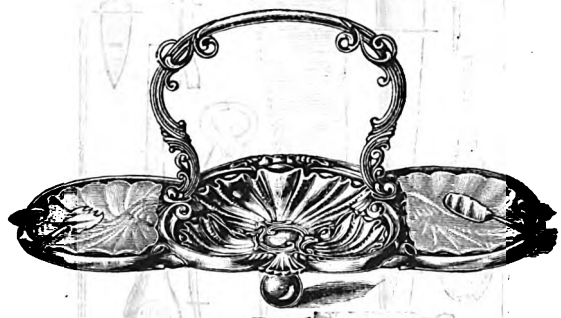

FIG. 1.

biscuits or bread, and two side glass shells—one for butter, the other for cheese (fig. 1). The older patterns made by this firm have hitherto contained but one shell. They are fashioned in electroplate and electroplated and gilt. The ornamentation used is modern French. A brisk demand has sprung up for bread-platters in electroplate and nickel-silver. The mounts are stamped from antique Sheffield dies which have not been used previously for half-a-century. These articles were originally introduced with chased borders, but the antique patterns have proved so successful that they alone are used at present. The export trade is reported to be very dull, and the general demand only moderately good. John Batt (G. Cutts & Co.), Broad Street, find the Australian market dull, and the continental demand slightly improved. They are experiencing a good demand for rams' horns, polished and mounted in silver or electro. Instead of the orthodox receptacle for snuff there are prettily-fitted tobacco-boxes at the base of the horn, and a series of rings affixed to a silver collar to hold cigars. There is also a receptacle for wax matches. This pattern is entirely new, and is admirably suited for smoking-rooms and gentlemen's tables. Handsome punch-bowls of new types are being made by this firm. A fine specimen in nickel, made to imitate silver, chased and decorated with vine-leaves and grape-clusters, is sure to meet with approval. A new liqueur-stand manufactured by this firm contains three bottles. Three shields are placed over the bottles, and fit so closely that the stoppers cannot be removed until the coverings are shot back by means of an ingenious mechanical arrangement. Pinder Brothers, Garden Street, have had a good demand during the past season for cups and other articles. Many novel designs in dessert and fruit dishes have recently been fashioned. Cases containing five-o'clock tea-spoons and tongs in silver, and cases of fish-carvers, nut-crackers, dessert-spoons, and sardine and sandwich servers are meeting with a steady sale. Mappin & Webb, Norfolk Street, have just finished a silver-mounted corf, with couplings, rails, wheels, and axles complete, for presentation to Viscount Milton, the heir to the Fitzwilliam estates. The coal is represented by a raised mass of black oxidised metal, into which an ink-well is sunk. The front of the corf contains an inscription. The inkstand is the

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gift of the miners employed at Lord Fitzwilliam's Elsecar collieries.

Soldering-sets, &c. — Edwin Blyde & Co., Lambert Street, are bringing out a new soldering-set. The cardboard box in which the various articles are fitted contains soldering-iron, a box of resin, a stick of solder, and instructions for use. The tools are well made, and are meeting with a brisk demand. This firm are very busy in juvenile and gentlemen's tool-chests of all sizes and prices. A new tool-rack (fig. 2), which can be hung upon the wall of a

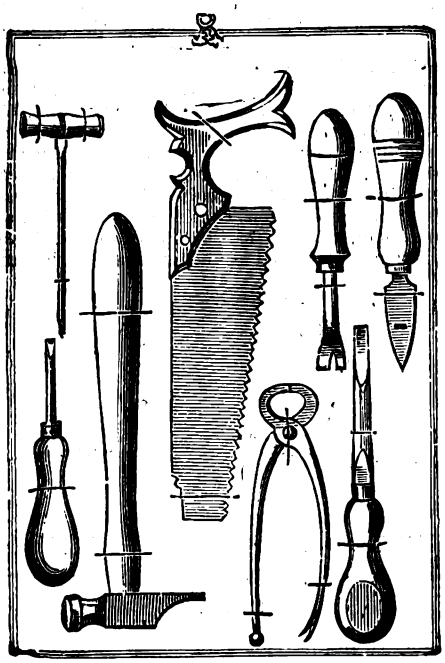

FIG. 2.

kitchen, contains saw, screw-drivers, gimlets, pincers, and hammer. The illustration appended represents a householder's card of domestic tools which has just been brought out by the firm. Upon the card are placed a sardine-tin opener, a tack-lifter, screw-driver, pincers, hand-saw, hammer, gimlet, and bradawl. The card has a very neat appearance, and will doubtless be well patronised by the trade.

LANCASHIRE.

Improvements in Boilers.—T. Taylor & Co. (Limited), Royal Exchange, Manchester, are introducing an improvement in boilers which by a simple device secures a greatly increased evaporative efficiency. There is an absence of anything like complication of parts, the system consisting of an arrangement of angle-irons, riveted longitudinally on to the inside of the furnace-flue, and on the outside of the boiler-shell in the side flues, the object of these angle-irons being to arrest and absorb the heat and transmit it to the water. Of what may be termed heat-arresters there are ten, 3 inches by 3 inches and $\frac{3}{8}$ inch thick, riveted on to the first and second plates in the tube over the firegrate. Beyond the bridge other angle-irons, 3 inches by 5 inches by $\frac{3}{8}$ inch thick, are riveted around the flue, the 5 inch part of the angle being presented to the flames, and forming the heat-absorber. On the outside of the shell of the boiler angle-irons are riveted, 3 inches by 6 inches and $\frac{3}{8}$ inch thick, with the 6-inch part radiating from the shell into the side and bottom flues. Beyond the addition of these heat-arresters no alteration whatever is made in the boiler, and in the tests which have been made with one of the Cornish type fitted with these heat-arresters an improvement of nearly 100 per cent. in the evaporative efficiency of the boiler was secured. Other advantages of the arrangement are that the angle-irons not only arrest and transmit the heat to the water, but they form channels along which the flames sweep in close contact with the boiler, in that respect also increasing its steam-raising capacity, whilst the boiler is also materially strengthened by the addition of the angle-irons, inasmuch as these form a series of longitudinal ribs external to the flue and shell. The opinions of leading engineers who are authorities on boiler-construction have been obtained, and in all cases they are of a highly satisfactory character.

Improvement in Metal Hand-lamps.—Mr. Thomas R. Rowell, 10 Cannon Street, Manchester, is manufacturing a small steel metal hand-lamp, fitted with one of Leeming's latest improved patent benzoline-gas burners, and containing several other special features, which will make it a very useful lamp for builders, contractors, and all firms employing a number of workmen who require a safe, strong hand-lamp which will burn in any position. The special features claimed for this lamp are that it is absolutely safe, unbreakable, and unaffected by draught, whilst it is smokeless, and a good light can be produced at a cost of 1*d.* per ten hours. Amongst the improvements which have been made in this lamp is that the air-chamber previously required in lamps of this description has been altogether dispensed with, air being admitted through a groove cut in the side of the burner, so that there is always the same pressure of air both inside and outside the lamp. The burner consists of a long tube, one portion of which is screwed down into the lamp, and the other projects some three inches from the top of the lamp. The oil travels up the burner by means of a wick, which comes to within half an inch of the top of the burner, leaving room for the oil to generate into gas, in which form it gives out the light; and as the wick is not burned off, but only charred by the constant heat, it will, it is stated, last for one or two years. The oil-tank is also of special construction, being so arranged in the form of a reversible pocket ink-bottle that in whatever position it is turned no oil can escape. For fixing and lighting the lamp the inner tube, which forms the burner, is taken out, and about half a pint of benzoline is poured into the body of the lamp, which is then turned upside down to test if any liquid will return, and when none will come out the lamp is fully charged. The inner tube having been replaced and screwed down, and the wick having become thoroughly saturated, a lighted match is held to the top of the tube, and when this becomes sufficiently warm gas is generated and ignition takes place. The flame comes out from the burner in a series of small jets, which can be maintained the same size by simply keeping the holes of the burner cleared by inserting a thin needle provided for the purpose. The lamp can be made in any material, such as copper, tin, iron, &c., and also of any shape that may be required. The lamps now being made are simply designed for workshop purposes, but household, carriage, tram, and bicycle lamps on the same principle are being prepared, and it is expected will be placed upon the market before long.

Patent Radiators, as manufactured by Mr. J. G. Wagstaff, Alma Ironworks, Dukinfield, are a class of goods for which an increasing demand is being experienced. The two leading patterns for 1893–94 are the "Anglo-American" and the "Alpha," the former being composed of single and the latter of double loops, fixed transversely; but radiators with more than two loops can be made to order, and in circular, pillar, angle, radial, or square patterns. The "Anglo-American" pattern above referred to has a box connecting all the loops together at the top as well as the bottom, therefore giving a perfectly free circulation, and is equally suitable for hot water or steam. It is claimed to give considerably more actual heating-surface than any other radiator made for the space occupied, the greatest width at base being only 4 inches. It is perfectly self-contained, has no loose parts, is neat in appearance, and requires no coil-case or cover. All the appliances of this class supplied by Mr. Wagstaff are tested to 100 lbs. per square inch before leaving the works. Illustrations of these goods, as well as of other specialties manufactured by the same firm, will be found amongst the insets bound up with the business announcements of our last issue.

The "Victoria" Ceiling-protector.—Baxendale & Co., Miller Street, Manchester, are introducing a new ceiling-protector (Greenhough's patent), which is a very simple arrangement, and can be readily fixed by any inexperienced person. This protector is shown in the accompanying illustrations.

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(figs. 1 and 2), in which the whole arrangement both for pendant and bracket gas-lights can be clearly seen. In most

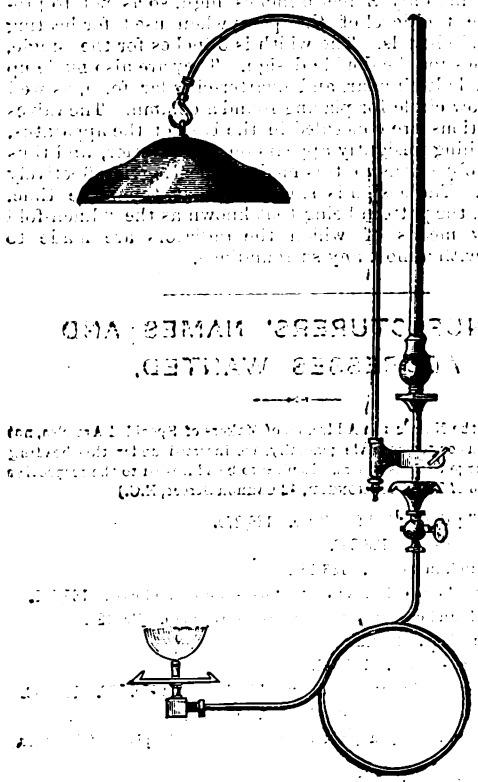


FIG. 1.

kitchens and many sitting-rooms the gasfitting is a one-light slide-pendant, which is fitted with a stuffing-box, so as to enable the inner tube to be drawn down or pushed up without

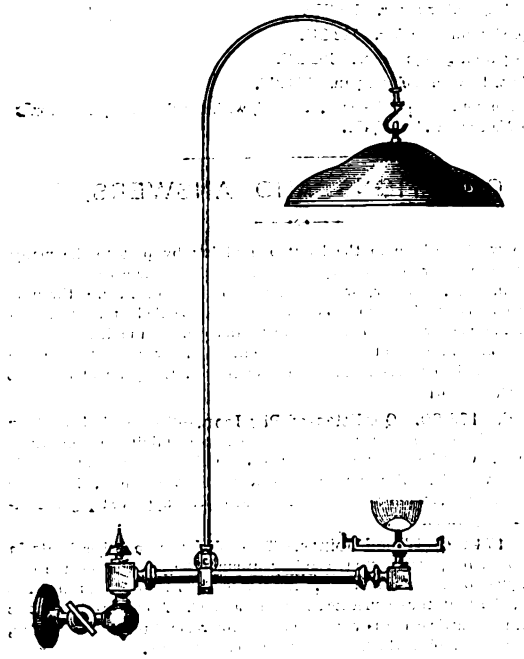


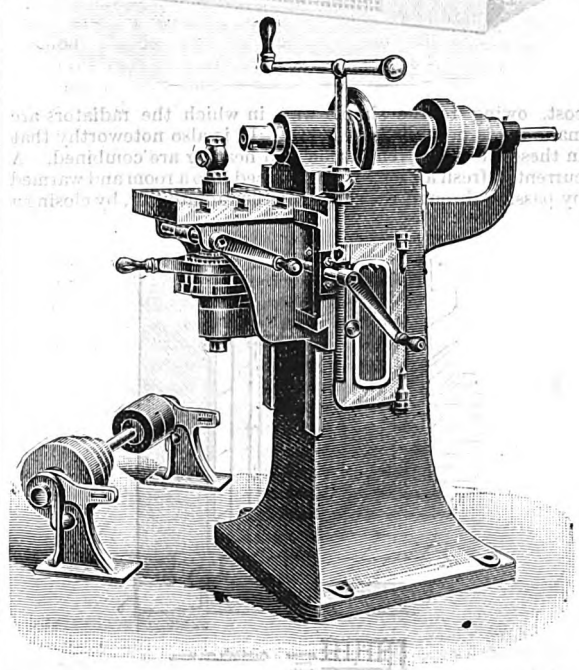
FIG. 2.

out the gas escaping, and hitherto the ordinary smoke-protectors have been suspended from the ceiling by a hook, frequently necessitating considerable disfigurement of the ceiling before it could be securely fixed. With the "Victoria" ceiling-protector all this troublesome attachment to the ceiling is dispensed with, the protector being fixed on to the gasfittings themselves, whether they are slide-pendants or brackets, without the necessity of calling in a gasfitter or workman. These protectors, as will be seen, are simply held by patent clips and holders, and can be easily fixed on to the gasfittings, whilst they possess other advantages, in that they are always in action in whatever position the light may be turned. In the case of a pendant the light can be turned round to any angle or down to the full extent, and the glass-shade protector is always over the burner, and at the proper distance to protect the ceiling from smoke, whilst in the case of a bracket the protector moves round with the gasfitting in whatever position it is placed. Another advantage is the comparative ease with which the protector can be drawn down with the slide and the glass lifted off for cleaning purposes and replaced in position without the trouble of mounting a step-ladder. These protectors are supplied in polished brass, in plain or decorated designs, so that they are an ornamental as well as useful addition to the gasfittings.

New Design in Steam-hammers.—B. & S. Massey, Steam-hammer Works, Openshaw, Manchester, have just completed an exceptionally powerful hammer of special design. This hammer is of the girder form, with slides, and the weight of the falling-parts is 2 tons. The hammer throughout is of very strong construction, and so arranged that there is plenty of working-room underneath the framing, which consists of a strong wrought-iron girder, with a span of 13 feet, with a height of 6½ feet, supported upon cast-iron pillars. The hammer is arranged to work either double or single acting, and is fitted with hand-worked valve-gear, with the levers placed in a position most convenient for the workmen. The diameter of the cylinder is 18 inches, with a maximum stroke of 45 inches. The hammer forms part of a large order which the firm are executing for Russia.

HALIFAX.

Machine-tools.—John Sutcliffe & Son, New Bank, have just introduced an improved brassfinishers' shaping and



milling-machine, which is believed to be a great advance upon previous brass-shaping machines, inasmuch as the dividing apparatus is set beneath the table, and so is free from getting choked by the cuttings. The dividing-apparatus is of an improved form, and can be set to square two, four, six, or eight sides. When so set it is locked in such a way

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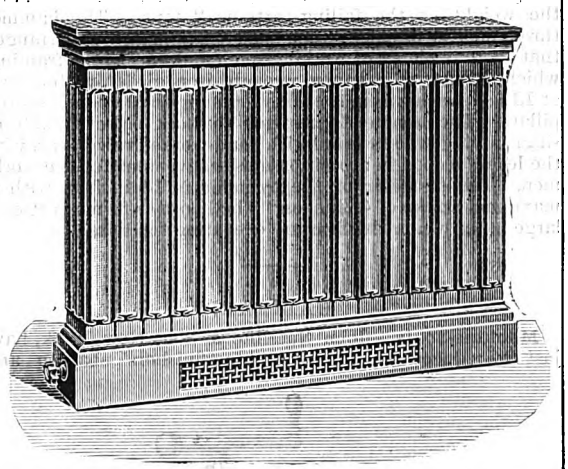
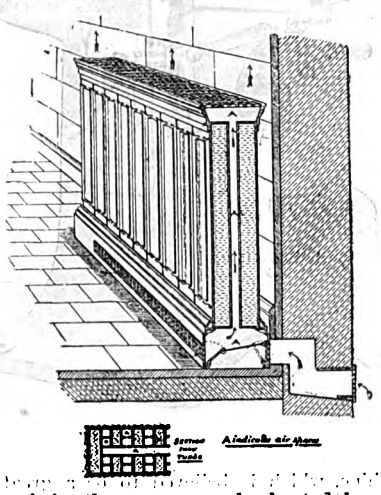
that it is impossible even for the most unskilled workman to make any mistake as to the number of sides to be squared. The spindle is mounted in a steel bush, running in phosphor-bronze bearings, and by turning a hand-wheel can be moved in or out 6 inches. The table, together with the dividing-apparatus, will rise and fall 15 inches, and has a longitudinal traverse motion of 14 inches. The machine may be used for ordinary milling-work, the table being provided with T slots for bolting the work on. There is also a handle and worm gearing to radius the chuck for milling circular work. The machine is, in addition, capable of being used for cutting or cleaning the teeth in small gear wheels. The machine casting is hollow, and is fitted up as a cupboard with two shelves and a door. The total weight of the apparatus is about 12½ cwt.

LOUGHBOROUGH.

Messenger & Co., of this town, horticultural-builders and hot-water engineers, are making a specialty of radiators for hot-water or steam, these appliances being found much more effective than coils for heating public buildings, churches, residences, shops, offices, &c. Their heating-surface is believed by the manufacturers to be larger than that of any other radiator at present produced, while the



cost, owing to the simple way in which the radiators are made up, is proportionately low. It is also noteworthy that in these radiators ventilation and heating are combined. A current of fresh air may be introduced into a room and warmed by passing through the centre of the radiator, or, by closing a



valve, the air in the room may be heated by circulating through the radiator. The apparatus is under complete control, so that the ingress of cold air may be cut off at pleasure. The radiators are made up in single and double tubes of various ranges, the double one having from 48 to 96 feet, and the single one 24 to 45 feet of heating-surface, according to the number of tubes. They are made in two sizes, one being only 2 feet 6 inches high, so as not to protrude above the level of the pews when used for heating churches and chapels. The width is 5 inches for the single, and 8½ inches for the double design. They are also made up in circular, half-circular, and quarter-circular form, as well as in a hollow circle for placing round a column. The valves and connections are concealed in the base of the apparatus, so that nothing unsightly appears on the exterior, and thus one of the objections to this mode of heating is effectively got rid of. The design is simple, but, at the same time, ornamental, the pattern being that known as the "linen-fold mould," by means of which the radiators are made to harmonise with almost any surroundings.

MANUFACTURERS' NAMES AND ADDRESSES WANTED.

[Inquiries for the Names and Addresses of Makers of Specified Articles, not known to us or to the trade generally, are inserted under this heading free of charge to Subscribers. Replies to be addressed to the respective Nos., Office of THE IRONMONGER, 42 Cannon Street, E.C.]

"Matthew's" patent blind furniture. 186/270.

"Smith's" water-bar. 186/260.

"British" pitch in barrels. 186/160.

"Hit and Miss" brass circular ventilators, stamped and cast. 186/180.

Repoussé tools and chasers, either English or German. 186/120.

Type-metal makers. 186/320.

"Victoria" tree-pruner. 186/310.

Copper hand-lamps in cardboard box, white label and No. 138. 188/640.

"Bishop's" steel-bound cardboard boxes. 187/210.

Door-gong actuated by a push from the outside in place of knocker. 187/270.

Flexible zinc gas-tube. 187/440.

Handles and hoops for bushel-measures. 188/200.

Glasses for miners' safety-lamps. 188/170.

Bank's chimney-cowl. 188/200.

"McDurmotu" drill for colliery use. 188/340.

Bellamy's graining-paper. 188/350.

"Eclipse" tennis-marker. 192/240.

Smith's patent gas-governor. 192/200.

"A.L." St. Lawrence closet-pan. 188/210.

Ships' ironmongery—trade-mark, a shield, with scroll bearing the words "I Mak Siccar." 187/450.

QUESTIONS AND ANSWERS.

[Hitherto we have been in the habit of replying by post to the many questions which reach us every week. As many of these are of general trade interest, however, we shall reply to these, in future, through the columns of THE IRONMONGER, and shall be glad at all times to have the co-operation of metallurgists and others in maintaining the utility and interest of this department. Wherever practicable the answers are by experts or leading authorities on the particular subject of the question.]

J. R. F. 173/90. Qualities of Pig Iron.—Scotch pig is used for castings in which strength is not of such moment as fluidity in running in the moulds. Cleveland pig gives castings which are hard and capable of bearing weights. For chilled rolls a mixture of pigs, including hematites, is used, and for locomotive-cylinders the approved pig is cold-blast iron of special make.

T. P. 174/69. Wiped Joints.—These differ from other joints in being formed by pouring molten solder around the junction of the two pieces of pipe to be joined together. A blow-joint is made by means of a blowpipe, the heat thus generated forming a weld. A copper-bit joint is made with this article and is very well suited for general repairs of tinware, &c., but not for a joint which is to be used under pressure.

J. S. & S. W. 189/43. Apparatus for Raising and Lowering Sashes without the Use of Cords.—Several inquiries have been addressed to us lately for an appliance to be used in place of cords for adjusting window-sashes, but so far as we can hear nothing of the kind is yet on the market. We are informed, however, that one or two inventors have been at work upon the idea for some time past.

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A. E. P. 192/32. Waterworks-fittings Abroad.—Will you inform me in what countries abroad water is supplied to dwellings by mains with high pressure: also if they use the same kinds of fittings, such as valves, screw-down, and ball-taps, as in England?—Water is supplied at various pressures to all the large cities and towns of the world, and in all the more advanced centres fittings similar to our own are in use—indeed, they are largely of British make. Many continental cities are much behindhand in sanitary matters, but they are now "waking up" in that respect.

OILS, PAINTS, AND SUNDRIES.

Linseed Oil is again rather dearer. Spot pipes in London offer at 21*l.* 5*s.*; one month, 21*l.* 7*s.* 6*d.* to 21*l.* 10*s.*; October-December, 20*l.* 12*s.* 6*d.* to 20*l.* 15*s.*; and January-April, 20*l.* 10*s.* The quotation for naked spot oil at Hull is 20*l.* 7*s.* 6*d.*; October-December, 19*l.* to 19*l.* 5*s.*; and January-April, 19*l.* 2*s.* 6*d.* The market at Liverpool is steady at last week's prices.

Rape Oil has declined in the interval, but sellers are firm at the reduction. Brown on the spot is 22*l.* 5*s.* to 22*l.* 10*s.*; January-April, 22*l.* 15*s.* to 23*l.* Refined spot, 23*l.* 15*s.* to 24*l.* Ravison on the spot, 21*l.* 5*s.* to 21*l.* 10*s.*

Olive Oil.—A moderate business is passing at Liverpool, but sellers ask full rates, the range being from 32*l.* 10*s.* to 41*l.* per tun. In London Mogador is 33*l.*, and Spanish 35*l.*

Refined Petroleum Oil.—Arthur Brown & Co. report:—"There has been no improvement this week; stocks continue very heavy, and prices are rather in buyers' favour. Prime and standard white American offer at 3½*d.* to 4*d.*; October-December, 4*d.*; January-March, 4*d.* Russian prime white is 3 9-16*d.*, and October-March 3⅝*d.*" As compared with August 1 stocks in the United States have decreased from 14,768,615 barrels to 14,304,048 barrels. The average daily production has increased from 85,900 barrels to 89,797 barrels. The receipts in August were 2,604,384 barrels, as compared with 2,492,821 barrels in July.

Palm Oil at Liverpool is a firm market, and 100 tons are reported sold, including Lagos at 25*l.* 7*s.* 6*d.* to 25*l.* 10*s.* per ton in transit.

Fish Oils are sluggish and unchanged in value. Crude sperm is 49*l.* to 50*l.*; Norwegian whale, 19*l.* to 20*l.*; pale seal, 22*l.* to 23*l.*; and Newfoundland cod 24*l.* to 24*l.* 10*s.*

Turpentine has declined. American in London is now 21*s.* on the spot, 21*s.* 6*d.* for October, and 22*s.* to 22*s.* 3*d.* to for January-April.

Tallow is a shade dearer. For Australian mutton, good to fine, 28*s.* to 29*s.* 3*d.* is now asked, and for good to fine beef 27*s.* 3*d.* to 27*s.* 9*d.* is the range.

Rosin has not improved, as was anticipated last week. American strained is 3*s.* 7½*d.* on the spot, and 3*s.* 7*d.* for shipment.

Oilseed Cakes.—The market in London is firm and fairly active. London-made linseeds offer at 8*l.* to 8*l.* 5*s.*, and Westerns at 7*l.* 2*s.* 6*d.* to 7*l.* 5*s.* Rape cakes on the spot are 4*l.* 7*s.* 6*d.* to 4*l.* 10*s.*, and Black Sea 3*l.* 15*s.* Best brands of cotton cakes are 5*l.* 7*s.* 6*d.*, and decorticated 6*l.* 15*s.* American linseed oilcakes at Tuesday's market at Liverpool were in decidedly better demand, and a good trade was concluded at the full prices current on Friday of last week—viz., 7*l.* 5*s.* to 7*l.* 7*s.* 6*d.* per ton for prime Western on the spot. Forward deliveries are very firm, with 7*l.* 2*s.* 6*d.* per ton bidding for October and November deliveries, but sellers are still very reserved. A moderate business was done in Liverpool makes at steady prices—viz., 8*l.* 5*s.* to 9*l.* per ton, according to brand. American decorticated cottonseed cakes continue in very good request at the quotations—viz., 6*l.* 10*s.* to 7*l.* 10*s.* per ton, according to quality. Only a retail business has again been transacted at former values for Liverpool decorticated makes—viz., 7*l.* 10*s.* to 7*l.* 15*s.*, but for undecorticated makes a brisk demand was again met with, and prices show a further 2*s.* 6*d.* advance, the quotation now being 5*l.* to 5*l.* 10*s.* per ton, according to brand. Egyptian also met a very good demand at the previous quotation of 5*l.* per ton.

Hemp.—Manila in London remains very dull; for arrival 500 bales fair current October-November steamer have been sold at 23*l.* c.f.&i. At Liverpool Manila is dull and easier; there being sellers of distant shipments of fair current at 23*l.* per ton, c.i.f. terms. At auction on Wednesday the small supplies sold at steady rates. Manila: 122 bales sold, on c.f.&i. terms, at various prices. Mauritius: 45 bales fair to good sold at 19*l.* 10*s.* to 22*l.* 5*s.* Sunn: 98 bales sold at 17*l.* 10*s.*, with one lot at 18*l.*, c.f.&i. Bombay: 100 bales withdrawn. Phormium: 83 bales bought in at 22*l.* Kapok: 42 bales Ceylon withdrawn.

Seeds.—John Shaw & Sons report that Wednesday's market was thinly attended, with but little business doing. Choice trifolium is now obtainable at very tempting rates. Winter tares are again dearer, and it appears likely that the supply will not hold out to go round. Seed rye is firm. There is more inquiry for peas and haricots. The canary-seed market daily gathers strength; doubts are expressed as to whether all the contract new seed bought can be delivered. Linseed tends upwards.

Imports of Ivory.—The arrivals for the next sales, to be held in October, are coming forward slowly. For the Liverpool sale on the 17th there is at present in the docks about 6 tons, comprising 8 cwt. Angola, 46 cwt. Gaboon, 23 cwt. Cameroon, 33 cwt. Lagos and West Coast, and 10 cwt. Tripoli. Two more steamers are expected to arrive from the West Coast before the sale, but the quantity they will bring is at present unknown. For the sales in London, commencing on the 24th, there has arrived 28 tons, composed of 7 tons East Indian, 7 tons Egyptian (mostly Alexandrian description), 4½ tons Ambriz, 3 tons Congo, 4 tons Niger, ¾ ton indirect goods, ½ ton Cape, 1 ton sea-horse, and ¼ ton rhinoceros horns. There is every prospect of a small sale in London next month. At present there are only 4 tons Abyssinian teeth known to be on the way; 59 tons have been delivered from the docks since the last sale. The Antwerp sale was fixed for November 1, but being All Saints' Day the sale has been postponed to the 3rd and 4th. At present there are 55 tons, mostly Central African description, in warehouse.

"Floorine."—A useful combination of stain and varnish is the new material termed "Floorine," now being put on the market by S. W. Tomkins & Co., Ostrich Paint and Varnish Works, Bristol, the inventors and sole manufacturers of it. Floorine can be used either on new floors or on those that have been previously stained. It dries quickly with a hard fine gloss, gives the appearance of natural wood polished, is an aid to sanitation, and greatly heightens the effect and comfort of the home. Floorine is supplied in light and dark oak tints, and shows off to great advantage rugs, skins, and carpets, to which it serves as a bordering. For giving a finish to the hall, staircase, landings, or bathroom, it is highly recommended, whilst in cottages, where carpets and floor-coverings are apt to be scarce and scanty, an appearance of cosiness and even luxury can be attained at a small cost by a judicious application of the material. Floorine is sold in ½-pint, pint, quart, ½-gallon, and gallon jars at prices which place it within the reach of all. For the trade the makers supply handsome and attractive counter, window, and floor show-stands, which are well calculated to promote the sale of the preparation.

MERCHANTS' CIRCULARS.

Also see our latest Telegrams.

SCOTCH PIG IRON.

WILLIAM COLVIN & Co. (Glasgow) report:—

TUESDAY.—The warrant market continues very quiet, and the fluctuations in prices have been unimportant. On Wednesday and Thursday of last week business was done between 42*s.* 7½*d.* and 42*s.* 6½*d.* cash, while on Friday the price improved to 42*s.* 9*d.* On Monday the tone of the market was easier, and the price gave way from 42*s.* 8½*d.* to 42*s.* 7*d.* To-day it was steady at 42*s.* 6½*d.* and 42*s.* 6*d.*, with sellers over at the lower price, buyers offering 42*s.* 5½*d.* Cleveland warrants have been in better demand, and a considerable quantity has changed hands between 35*s.* 2*d.* and 35*s.* 6*d.* cash. The closing

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quotations to-day are 35*s.* 2½*d.* buyers, 35*s.* 3*d.* sellers. Hematite warrants remain pretty much neglected. We quote:—Cumberland hematite warrants 44*s.* 9*d.* buyers, 44*s.* 10½*d.* sellers, and Cleveland hematite warrants 43*s.* 3*d.* buyers, 43*s.* 4½*d.* sellers. The demand for makers' iron continues quiet, and the undernoted quotations show very little change since last week. **Shipments for the week ending** September 23, 3,231 **tons**; 6,375 **tons under same week last year.**

CUMBERLAND AND NORTH LANCASHIRE.

R. FELDTMANN & Co. (Whitehaven) report:—

TUESDAY.—The West Cumberland market for hematite iron remains quiet. Makers' prices for **Nos. 1, 2, and 3 Bessemer** are nominally **45*s.* to 45*s.* 6*d.* per ton, f.o.b. usual ports.** One lot of hematite warrants was done yesterday at 44*s.* 9½*d.* cash, this branch being likewise influenced by the small shipments; the price closes to-day sellers 44*s.* 10½*d.*, buyers 44*s.* 9*d.* cash. **Shipments during last week were 2,865 tons of hematite pig iron and 3,277 tons of steel. The number of furnaces in blast in this district is 34. Stock in Cumberland and Barrow stores,** September 25, **79,867 tons, being 10 tons decrease since** September **18, or 37,014 tons increase since December 24, 1892.**

MIDDLESBOROUGH.

JNO. STEVENSON & COWPER (Middlesborough) report:—

WEDNESDAY.—There has been a little falling-away in pig iron since last Wednesday. Considering that half the furnaces in Scotland are idle and a large number are out of blast in other parts of the country, coupled with the fact that shipments from Middlesborough this month amounted to 74,597 tons up to last night, it might have been expected that better prices would have been realised, but it is not an uncommon circumstance for pig iron to go contrary to prevailing conditions. Stocks are going down, which is another favourable factor, but there appears to be no confidence in the future of the trade, and this is evidenced by the present value of shares in local iron and coal companies, which are very low. Makers are asking 35*s.* 6*d.* for No. 3 and buyers offer 3*d.* less, grey forge is 32*s.* 9*d.* to 33 ., and hematite m/n 43*s.* 6*d.* net cash.

IRON, METALS, &c.

GEORGE COHEN, SONS & Co. (London) report, Sept. 26:—

Nearly every class of old metal, wrought and cast iron, and old rails have slightly stiffened in price with a better demand. The steel-scrap trade remains stagnant, with the exception of steel rails, for which there is a somewhat brisk call for export. Quotations (f.o.b. London):—METALS. —Heavy copper, 44*l.* to 48*l.*; gun-metal, 40*l.* to 45*l.*; brass tubes, 32*l.* to 37*l.*; scrap yellow brass, 30*l.* to 35*l.* IRON AND STEEL.—Old D.H. steel rails, 2*l.* 7*s.* 6*d.* to 2*l.* 12*s.* 6*d.*; old D.H. iron rails, 2*l.* 7*s.* 6*d.* to 2*l.* 12*s.* 6*d.*; steel scrap, 2*l.* to 2*l.* 5*s.*; heavy wrought scrap, 2*l.* 2*s.* 6*d.* to 2*l.* 7*s.* 6*d.*; cast foundry scrap, 1*l.* 15*s.* to 2*l.*; pipe cast, 1*l.* 12*s.* 6*d.* to 1*l.* 17*s.* 6*d.*; light cast, 1*l.* 5*s.* to 1*l.* 10*s.*

GREY & MARTEN (London) report on September 26:—

Home trade prices (per ton) are as under:—Pig lead, 10*l.* 5*s.*; sheet lead, 11*l.* 5*s.*; pipe lead, 11*l.* 15*s.*; composition gas-pipe, 13*l.* 15*s.*; patent shot, 14*l.*; hardened ditto, 15*l.*; white lead, 19*l.*; plumbers' solder, 45*l.*; tinmen's ditto, 50*l.*; blowpipe ditto, 60*l.*; sheet zinc, 21*l.*; ditto V.M., 21*l.* 10*s.*; spelter, 18*l.*; old lead, 9*l.* 5*s.*; old tea-lead, 8*l.*

T. W. & J. WALKER (London) quote for export, Sept. 28:—

COPPER, since our last, shows a slight falling-off: G.M.B.'s at 42*l.* 1*s.* 3*d.* to 42*l.* 8*s.* 9*d.*; sheets, 54*l.*; yellow metal, 4¾*d.* TIN.—Weaker: Straits, 79*l.* 5*s.* to 79*l.* 15*s.*; Australian, 81*l.* 5*s.* to 81*l.* 15*s.*; English, 85*l.* to 86*l.* LEAD.—Steady: pigs, 9*l.* 16*s.* 3*d.*; sheets, 10*l.* 17*s.* 6*d.*; pipe, 11*l.* 7*s.* 6*d.*; shot, 14*l.* SPELTER.—Weak: 17*l.* to 17*l.* 2*s.* 6*d.* ANTIMONY, 39*l.* QUICKSILVER, 6*l.* 8*s.* 6*d.* to 6*l.* 10*s.* per bottle. FENCING-WIRE, 6*l.* to 6*l.* 2*s.* 6*d.*, Antwerp. WIRE NAILS.—6*s.* 9*d.* to 7*s.*, Antwerp or London. IRON.—Bars and hoops and galvanised corrugated sheets: Owing to the unsettled state of the coal trade, prices are nominal.

BELGIUM.

OSCAR MOENICH & Co. (London) report on Sept. 27:—

A fairly brisk business has been done this week in Belgian bars and nail-rods at 4*l.* 6*s.* net for the former and 4*l.* 10*s.* for the latter f.o.b. Antwerp. Prices have since been put up from 2*s.* to 3*s.* per ton, but no transactions have transpired at the higher rates. The demand for plates continues fairly good at 5*l.* per ton. Wire nails are unchanged at 7*s.* per keg of 1 cwt. f.o.b. Antwerp or Rotterdam for Nos. 0 to 7, and some large orders have been placed at these figures for deliveries spread over the next six months. Basic bars have been dealt in at 4*l.* 16*s.* net f.o.b. Antwerp. German steel is neglected; the syndicate price remains unaltered at 9*l.* 12*s.* 6*d.* for "Double Horse," and 7*l.* 15*s.* for "Double Lion" quality f.o.b. Antwerp. There is no change in the prices of window-glass, which are as follows:—6*s.* 7*d.* to 7*s.* for ordinary Chinese assortments, and 17*s.* 6*d.*, 19*s.* 6*d.*, and 23*s.* for coarse, IV., and III. qualities respectively, for the English home trade.

FOREIGN AND COLONIAL MARKETS.

Also see our latest Telegrams.

France.

PARIS, SEPTEMBER 25.—A very fair demand is reported by merchants for structural ironwork owing to the activity of builders anxious to get forward with their work before bad weather sets in. Recent prices are firmly held, but no advance is likely unless exceptional circumstances should arise. The rolling-stock makers around Paris continue busy in orders for the large railway companies. The P.L.M. Company is paying attention to the subject of electric traction, and has ordered from Sautter Harlé et Cie. two experimental engines. These motors will be actuated by means of accumulators placed beneath a tender. Russian orders are finding their way into the Ardennes district. If only prices can be brought sufficiently low a grand opportunity is offered to the Ardennaise to establish permanent relationships with Russian buyers, the workmanship and finish of the small wares, for which the district is justly famous, enabling manufacturers there to distance all rivals when it is a question of quality only. The large ironworks at Commentry are at a standstill for want of water, and about 800 families are thrown out of work. Urgent representations are being made to the Government to take in hand the water-supply, *vice* the municipality, through whose incompetence and lack of foresight this unhappy state of things has been brought about. It may be of interest to English readers to know that the makers of foundry pig-iron in the Longwy and Nancy group *not* belonging to the Longwy Comptoir are:—(1) The blast-furnaces of Pont-a-Mousson, which consume all their pig iron in the manufacture of pipes and other castings at the rate of about 250 tons per twenty-four hours; (2) the blast-furnace of Gouraincourt, producing 70 tons of foundry iron daily; and (3) the establishment of M. Fould-Dupont which sends only a portion of its output to the Comptoir. Besides these, the Vézin-Aulnoye Company at Maxéville, owning two furnaces making 250 tons of refining pig, and the Société du Nord et de l'Est, at Jarville, running four furnaces and making 140 tons of refining pig and 140 tons of Thomas pig per twenty-four hours, remain outside the Comptoir. The Forges de la Providence will start their new Thomas steelworks at Marchienne in October next.

Belgium.

BRUSSELS, SEPTEMBER 27.—Manufactured iron for export continues firm, thanks to the sustained demand from Russia. A slight lull took place last week as a protest against the advance of prices, but the inevitable has been recognised, and orders are again coming along. Merchant iron is now selling at 115f., f.o.b. Antwerp, and as much as 117f. 50c. has been paid. Girders are also dearer, owing to the great decrease in the output consequent upon several important makers having temporarily ceased working in order to effect the transformation of the mills from iron to steel rolling. Firms well provided with work will not now quote below 117f. 50c. Sheets are steady, and the minimum price is 130f. alike for home and export. An excellent inquiry from over-sea consumers is reported at Antwerp. If the home market were as firm as the export branch the situation would show a very healthy improvement. A test of the actual strength of the market is found in the offers made for the supply of material to the State Railway Department to-day. Prices all round are lower than on the last occasion, especially as regards angles, the lowest offer being 129f. 50c. per ton, against 139f. 50c. in July. Trade is threatened with serious interruption from the strike of coal-miners here. At present the movement is only partial, but it is feared that it will become general in the course of the next few days. The current quotations are:—Luxemburg foundry pig, 52f. 00c.; **Charleroi foundry pig, 70f. 00c.; Charleroi strong puddling pig, 54f. 00c.; Charleroi ordinary ditto, 49f. 00c.; mottled, 47f. 00c.; Luxemburg puddling pig, 44f. 00c. Manufactured iron, No. 1, (for export) 115f. 00c., (for home) 115f. 00c.; No. 2, 120f. 00c.; No. 3, 125f. 00c.; girders, 115f. 00c.; angles, 120f. 00c.; ship-angles, 130f. 00c.; sheets, No. 2, (for export) 130f. 00c. (for home) 130f. 00c.; No. 3, 150f. 00c.; No. 4, 220f. 00c. Steel sheets, 170f. 00c.**

Germany.

BERLIN, SEPT. 28.—*Copper.*—Mansfeld, 100m. to 102m.; Rio Tinto, 94m. to 96m. *Tin.*—Banca, 190m. to 195m.; English Lamm., 175m. to 180m.; Australian, 175m. to 180m. *Zinc.*—Giesche, 38m. to 39m.; Silesian, 36m. to 37m. *Lead.*—Spanish, 28m. to 30m.; Harz, 22m. to 24m.; Silesian, 22m. to 24m.

COLOGNE, SEPT. 28.—Current quotations:—Spiegel iron, 10–12 %, 50m. to 51m.; Bessemer iron, —m. to —m.; best puddling pig, 40m. to 47m. Luxemburg white pig, 35m. to 36m.; German foundry pig, No. 1, 60m.; ditto, No. 2, —m. to —m.; ditto, No. 3, 53m. to —m.; bar iron, first merchant quality, 105m. to 110m.; fine grain, —m. to —m.; angles, 115m. to 120m.; girders, 90m. to —m.; best boiler-plate, first quality, 140m. to 145m.; seconds, 120m. to —m.; Siegen charcoal plates, 125m. to 130m. per 1,000 kilos.—*Cologne Gazette.*

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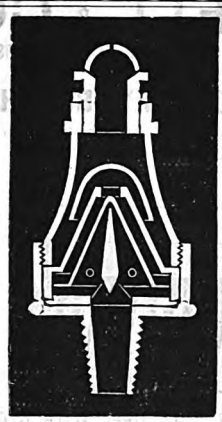

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ARE NOW REDUCED TO

12/- Per Dozen.

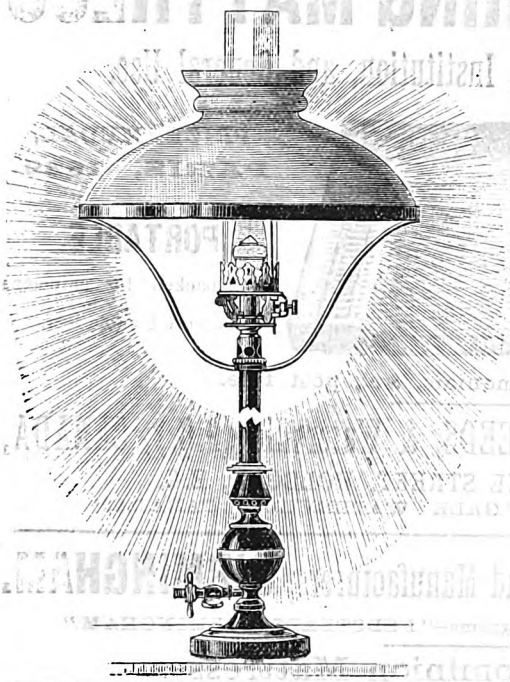
PEEBLES & CO., Tay Works, Bonnington, EDINBURGH, SCOTLAND.

London Wholesale Agents—

Messrs. HODGE & CO., 100 Hatton Garden; HULETT & CO., 55 High Holborn; EVERED & CO., 28 Drury Lane, and 50 Holborn Viaduct; MILNE, SONS & MACFIE, 60 Holborn Viaduct, E.C.

THE INCANDESCENT GAS LIGHT

IS NOW THE CHEAPEST LIGHT IN THE MARKET!



It surpasses, AS TO BRILLIANCY, every other light known, including ELECTRIC LIGHT; and as to cost, it saves 50 per cent. compared with any existing Gas-light, giving at the same time THREE TIMES MORE LIGHT.

The ORDINARY BURNER, with SPECIAL GLOBES, is suitable for lighting PRIVATE HOUSES, PUBLIC HOUSES, RESTAURANTS, SHOPS, MANUFACTORIES, &c.

SPECIAL LAMPS constructed for OUTSIDE LIGHTING and STREET LIGHTING, and LARGE CLUSTERS OF LIGHTS made for lighting HALLS and LARGE AREAS from one centre.

For substantial and pushing Agents this light is a very remunerative article.

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REFERENCES REQUIRED.

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Light to equal 100 CANDLES only costs ONE FARTHING per hour.

BURNS ANY MINERAL OIL.
SIMPLE TO MANAGE.
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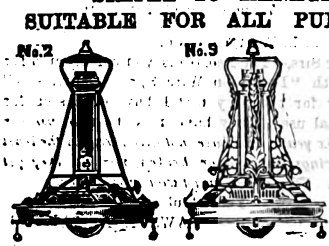

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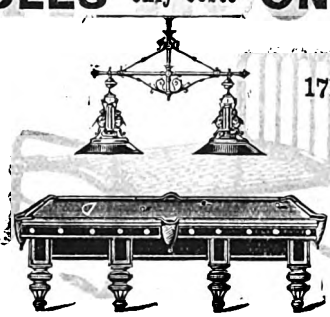

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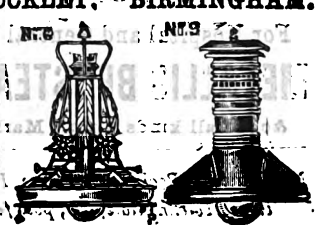

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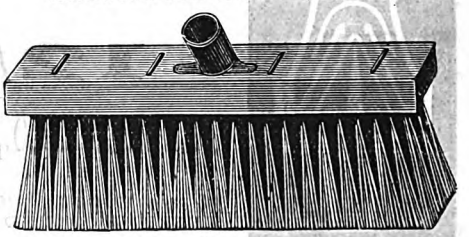
MANUFACTURERS OF

TUBE, FLUE, AND FOUNDRY BRUSHES;

Also every description of WIRE CLOTH, RIDDLES, SIEVES, and LOCKWORK ORE SCREENS (very heavy).



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For use in Gasworks, Stoke-holes, Steel and Iron Works, or where an ordinary brush is likely to get burned. Prices on application.

Works—636 SPRINGFIELD ROAD, PARKHEAD.

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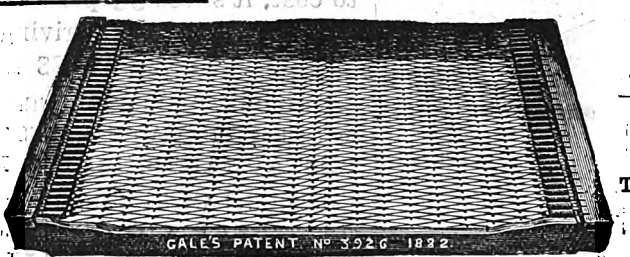
"DOMINION" WIRE SPRING MATTRESS

Combination Spring Bedsteads for Hospital, Institution, and General Use.

Guarantee given to all Dealers binding us to replace, free of expense, in case of failure of any part within fifteen years.



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Two packed for shipment measure 5 cubic feet.

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Spring Bedsteads fitted with Dominion Mattresses.

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SPRING BEDSTEADS

For Hospital and General Use.

METALLIC BEDSTEADS,

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New Pattern Book, with Prices, Illustrations, Testimonials, &c., post free.

AFTER SIX YEARS' WEAR.

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Messrs. S. B. Whitfield & Co.

Dear Sirs,—The Bedsteads you constructed for me with "Dominion Wire Spring Mattresses" are by far the very best I have ever seen for Hospital use. They have now been *in use for over six years, and have not given way in the least the springs have never broken, nor do they get rusted. They are in every way satisfactory.*

Yours truly,

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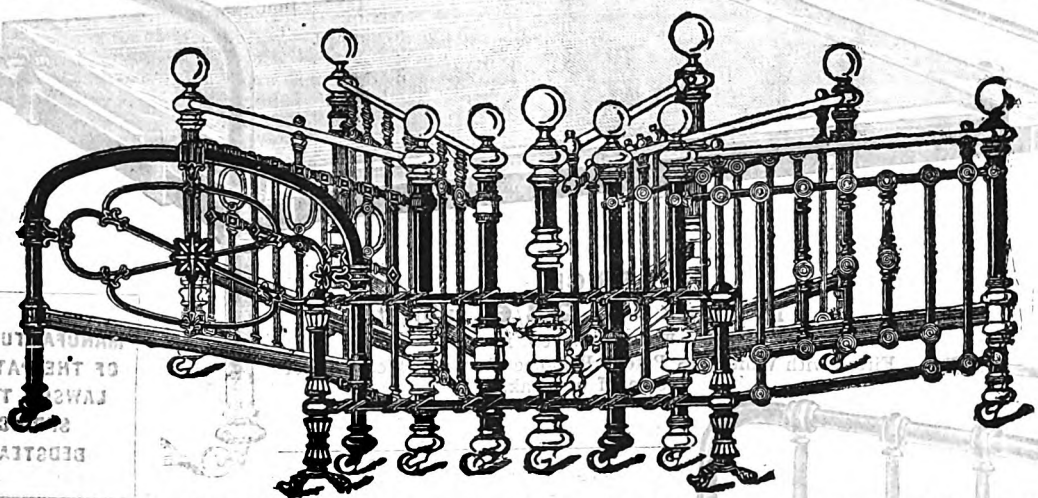

A New Invention for Supporting and Displaying Bedsteads. Makes Show Room or Window look full of Stock. Bedsteads of any size or make instantly secured.

PRICES FROM 15/6 net.

ESTABLISHED 1784.

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TABLE AND POCKET CUTLERY,

BUTCHERS', SAILORS', PRUNING, AND BUDDING KNIVES, RAZORS, SCISSORS, ETC.

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Guaranteed free from acid. Produces a Brighter Polish in less time than any in the market.

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Main Driving Belts any Width. | Single, Double, and Treble Belts. Hair Belts, Cotton Belts. | Link Belts. Endless Belts. Helvetia Laces. Hose Pipes.

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Cliffe Vale Pottery,

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Artistic.

Strong.

Sanitary.

Finest Earthenware.

Superior Castings.

PARTICULARS AND PRICES FROM MERCHANTS OR FROM THE MAKER.

"Another opening for the utilisation of iron and steel is that which was alluded to in our issue of April 26—namely, "metal furniture for use in tropical climates. In those climates the white ant is an energetic and abiding destroyer of "everything made of wood, and, in addition to these insect pests, the effects of the two or three months' incessant down- "pour during the rainy seasons are most destructive to all ordinary furniture. What with the ants and the wet heat, there- "fore, wooden constructions of all kinds are at a heavy discount in the tropics, and there can be no doubt that metal "furniture, made so as to be at once strong, light, and moderate in price, would sell very freely in the hotter parts of "Australia, in India, Burmah, and many other parts of the globe where the drawbacks to wood exist. Taking these two "obvious sources of demand in conjunction, it would seem to be fairly certain that architectural ironwork and metal "furniture, if properly designed and made, will be counted among our exports before long."—*The Ironmonger*, May 10th, 1890.

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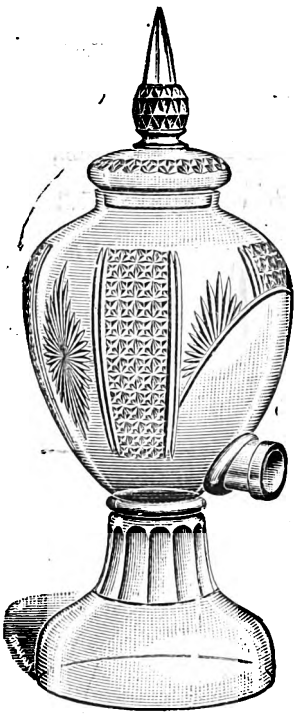

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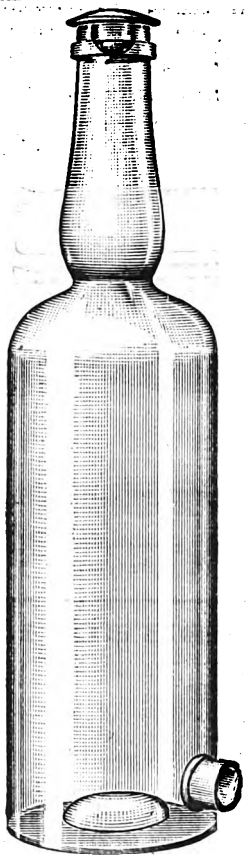

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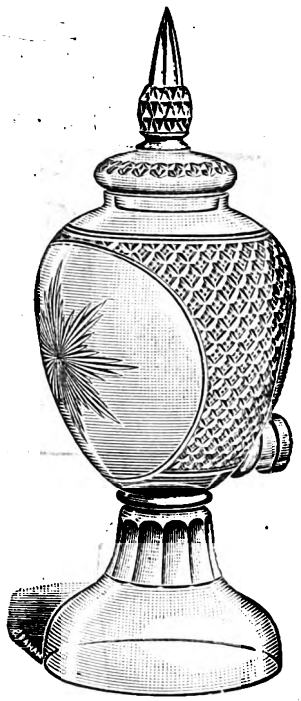

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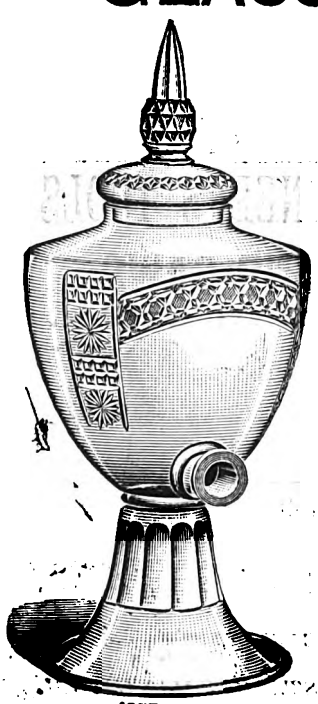
GLASS FOR LICENSED VICTUALLERS.



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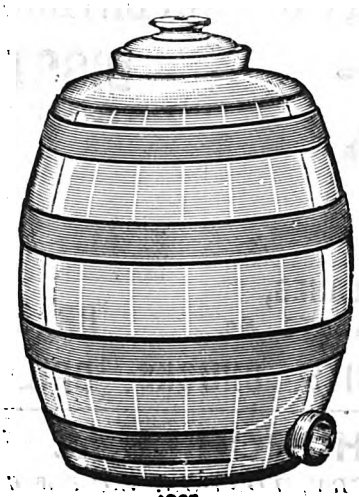

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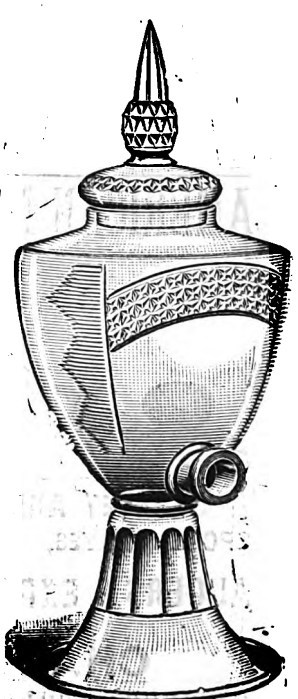

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Of the best English and American types.

LATHES, MILLING MACHINES, VICES, ARBORS, &c.

No. 1 Screw Machine.

With Automatic Wire Feed.

THIS Machine is adapted for making steel or other metal screws, in sizes from $\frac{1}{16}$ inch to $\frac{3}{8}$ inch diameter, and doing every kind of light, quick work for which such machines are generally used.

The Wire Feed is shown in the Illustration. It acts instantly while the Machine is in motion, and does not pull or mark the wire in gripping it, the lever tightening or releasing the hold by a movement in either direction.

The Chucks are tempered steel jaws, working in a hardened and ground taper shell in the end of the spindle, which brings the Chucks close to the bearing, and thus secures great rigidity, which, when taking a broad cut, is a point of great advantage.

The Spindle is bored from the solid its entire length, to take $\frac{7}{8}$ inch rough stock, and is ground true on its bearings. A loose collar is placed between collar on spindle and front box, to obviate danger of seizing and to reduce friction from end thrust.

The Headstock is fitted with hard gun-metal boxes or journal bearings made in halves, and held in position by caps. The Cone Pulley has three steps or speeds, the largest diameter being 6 inches, and carries a 2-inch belt.

The Turret has six holes for tools, and centres automatically and accurately for each, whilst working easily and rapidly.

All sliding surfaces are scraped to a bearing, and means are provided throughout the machine for taking up wear and maintaining accuracy.

In addition to what is shown in the illustration, a small face plate is supplied with each machine, to which other articles than screws may be fastened, and with suitable tools in the turret many otherwise difficult operations may be carried out.

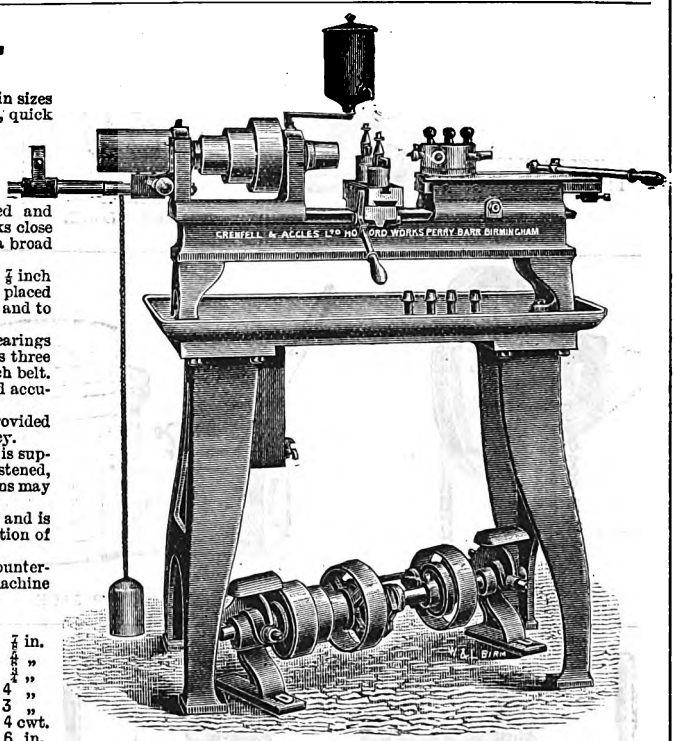
The Machine will cut right- and left-hand screws equally well, and is quickly reversible. The rest is fitted with tool-holder for either direction of cut off.

We supply with this machine a Two-Pulley Friction Clutch, Countershaft, and necessary Spanners, and the following tools, making the machine complete ready for work :—

TOOLS.
2 Filling Collars.
1 Cutting-off Tool.
1 Head Rounding Tool.
1 Die Holder and Die.
1 Adjustable Stop.
2 Hollow Mills and Holders.
1 Point Rounding Tool.
1 Chamfering Tool.
1 Set Chuck Jaws.

DIMENSIONS.		
Hole through Spindle	.. ..	$\frac{7}{8}$ in.
„ „ Wire Feed	.. ..	$\frac{3}{4}$ „
„ „ Turret	.. ..	$\frac{5}{8}$ „
Height of Centre over Bed	..	4 „
Movement of Slide	.. ..	3 „
Weight of Machine	.. about	4 cwt.
Length of „	..	5 ft. 6 in.
Height of „	to centre	3 ft. 7½ in.
Breath of „	..	2 ft. 0 in.

PRICE ON APPLICATION.



The Machine can be seen at our Warehouse, Albert Street, Birmingham, and in operation at our Works, at any time.

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Holford Engineering Works, Perry Barr, BIRMINGHAM.

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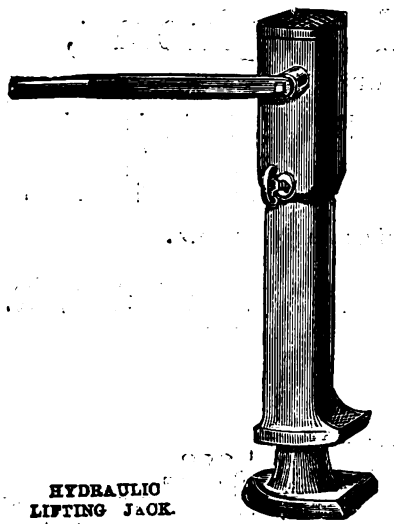
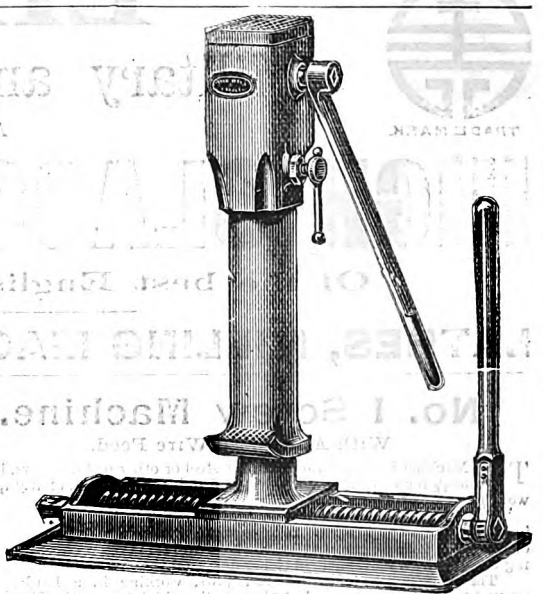
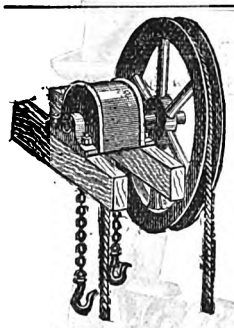


HYDRAULIC LIFTING JACK.

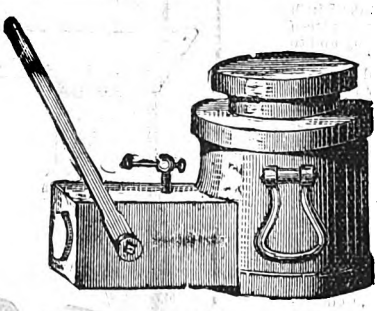
HELICAL PULLEY BLOCK.



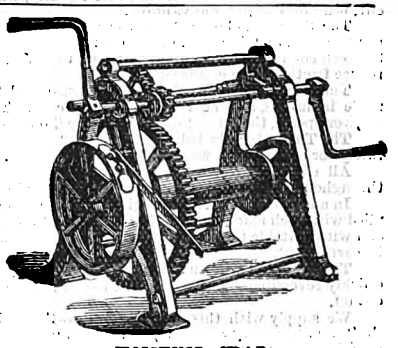
HYDRAULIC LIFTING AND TRAVERSING.



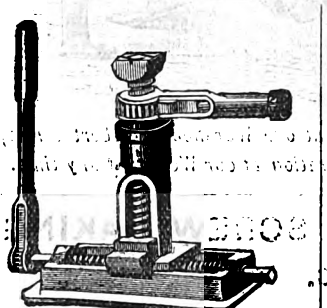
DOUBLE LIFT SAFETY HOISTER.



HYDRAULIC SHIP JACK.

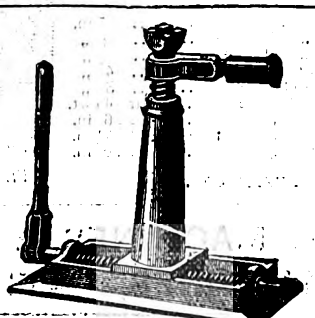


HOISTING CRAB.

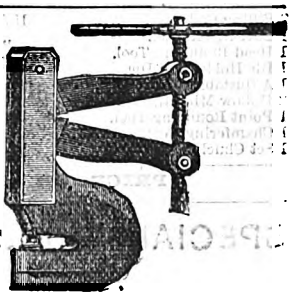


TRAMCAR TRAVERSING JACK.

IRON HALEY JACK.



BOTTLE TRAVERSING JACK.



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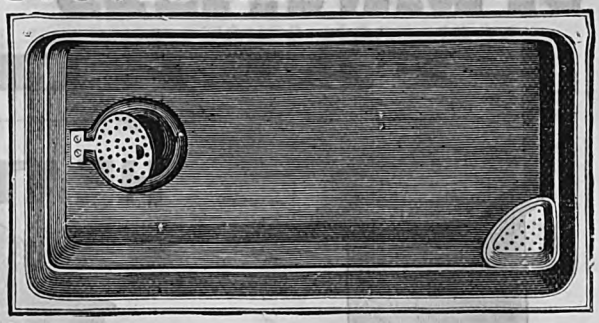

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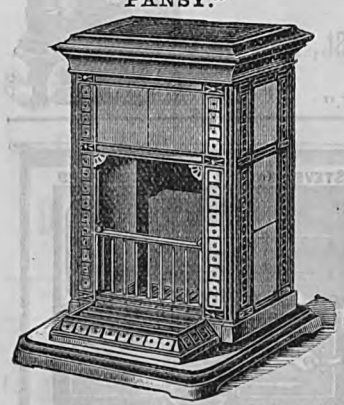
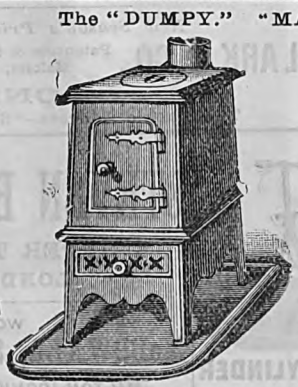


The "ROSE."

The "DUMPY."



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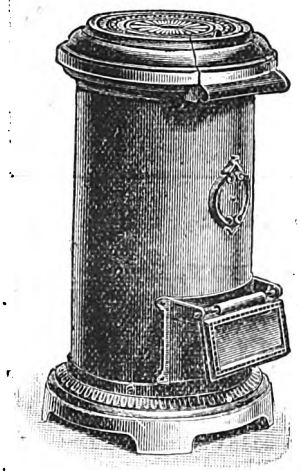
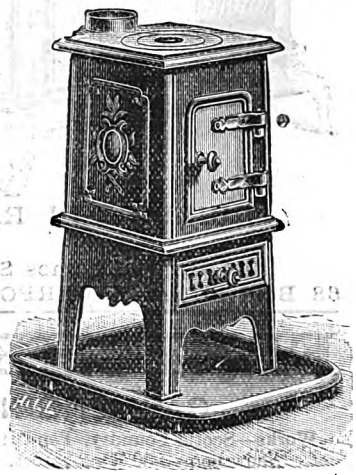


THE "WINTER."

[0] [4a] [5a] [6a] [7a] [8a] [9a] [10a] [11a]

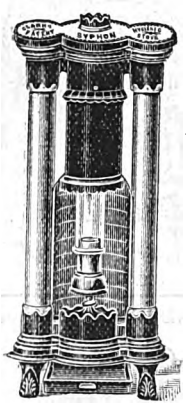
THE "QUEEN."

STOVES.



"M" DUMPY STOVE.

WRITE FOR PRICE LISTS.



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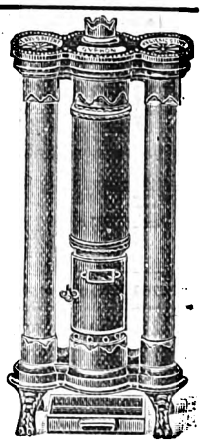

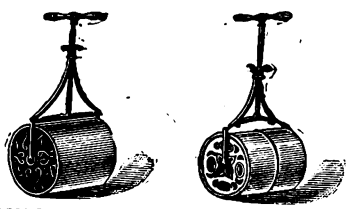

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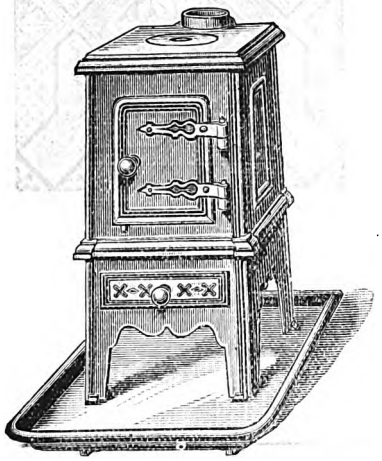

No. 9.
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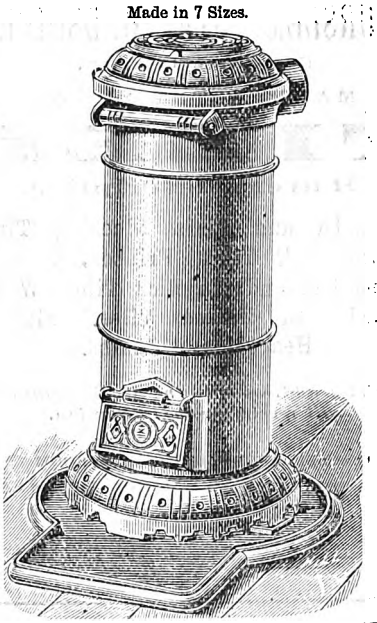
Made in 7 Sizes.



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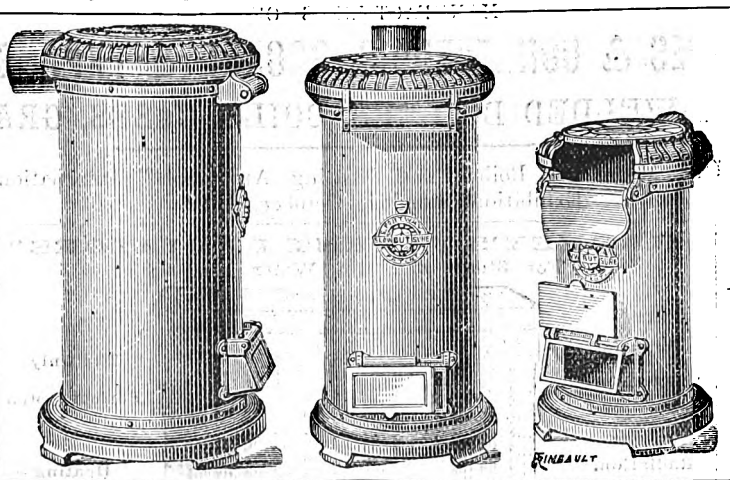
C. PORTWAY'S SLOW BUT SURE PATENT



C. PORTWAY'S SLOW BUT SURE PATENT

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No. 1	20 " 9 "	" 2,000 "	0 16 0
No. 2	25 " 10 "	" 6,000 "	1 4 0
No. 3	30 " 12 "	" 10,000 "	1 15 0
No. 4	32 " 14 "	" 15,000 "	2 10 0
No. 5	34 " 16 "	" 25,000 "	4 0 0
No. 6	40 " 18 "	" 40,000 "	5 5 0
No. 7	45 " 21 "	" 70,000 "	8 0 0
No. 8	50 " 24 "	" 120,000 "	12 0 0

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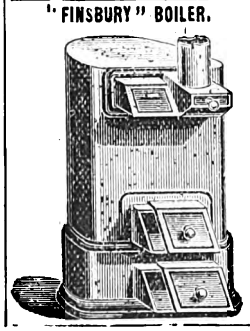

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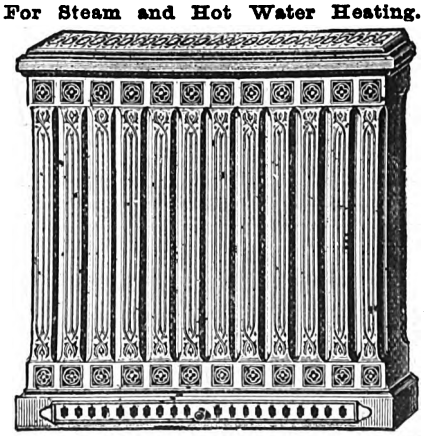

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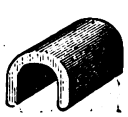
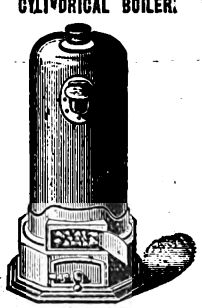


INDEPENDENT CYLINDRICAL BOILER.



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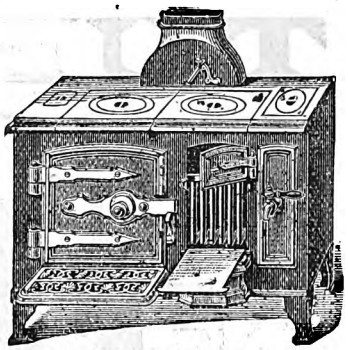
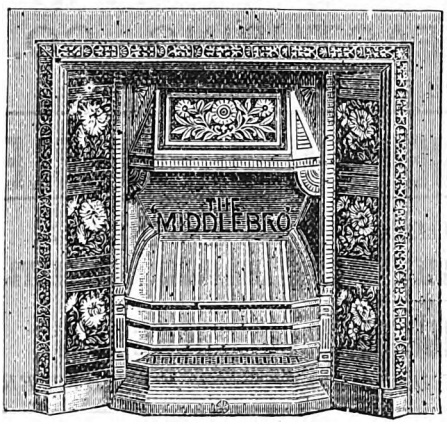
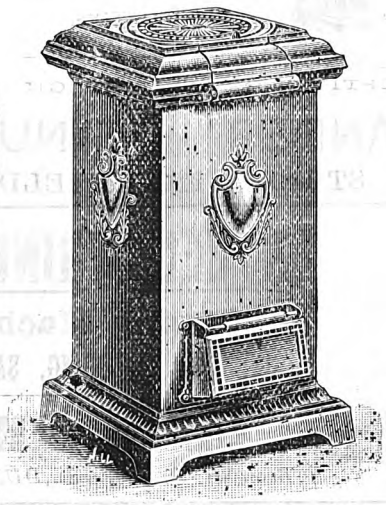
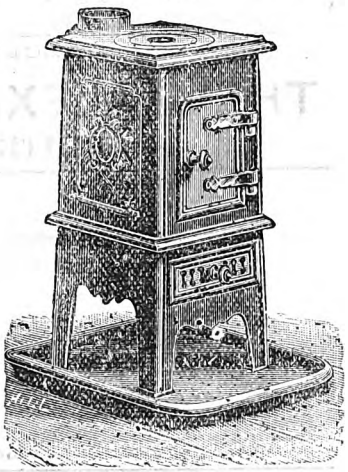


SCOTTISH CHIEF RANGE.



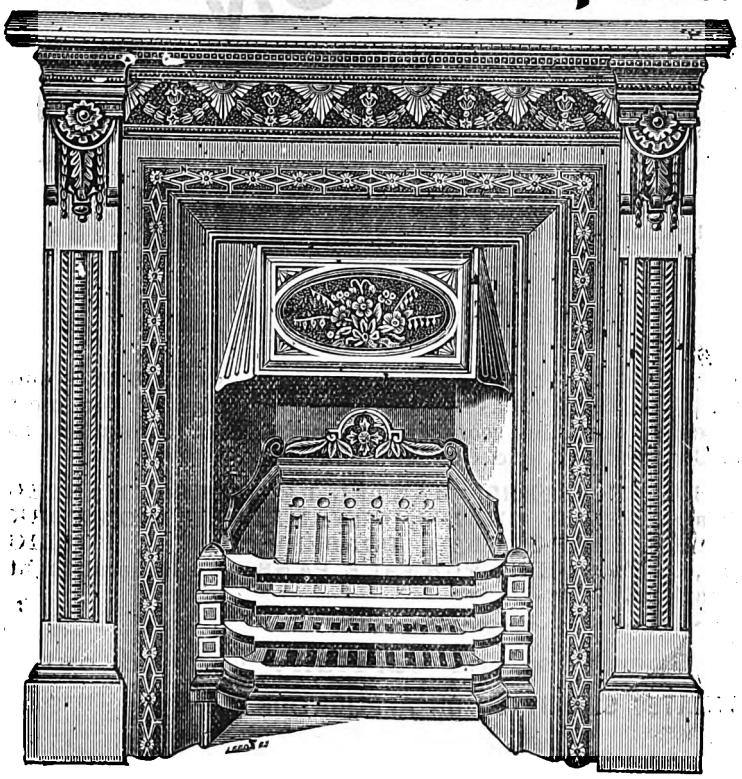


NEW SQUARE "WINTER" STOVE.



"M" DUMPY STOVE.

MATHIESON, WILSON & CO.



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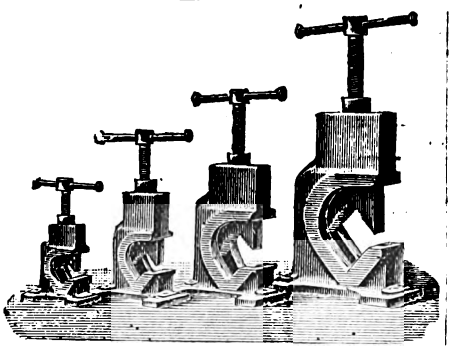

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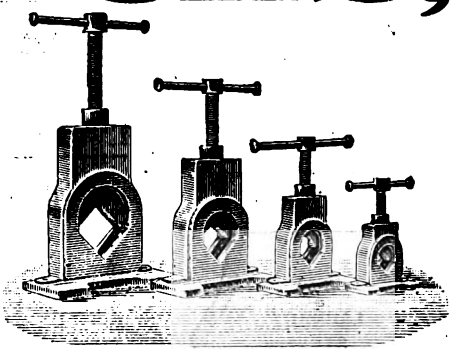

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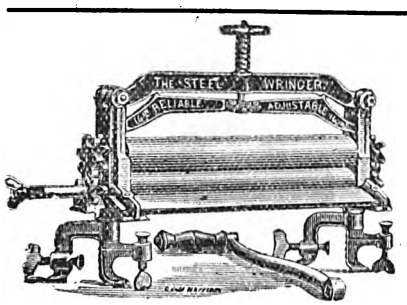

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Sewing Machines for all purposes:
DOMESTIC, TAILORING, SACKS, SAILS, TARPAULINS, AND BELTS.

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Architects' Designs and Specifications carefully carried out.

DESIGNS AND ESTIMATES SUBMITTED ON APPLICATION.

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TRADE MARK. TRADE MARK.

GEORGE SALTER & CO.

West Bromwich,

MANUFACTURERS OF

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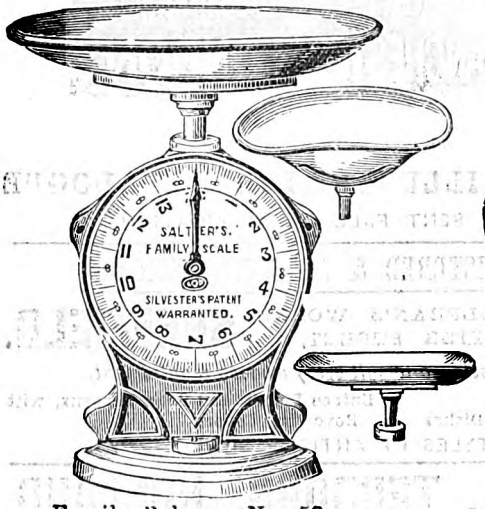
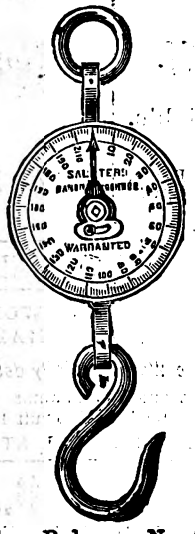
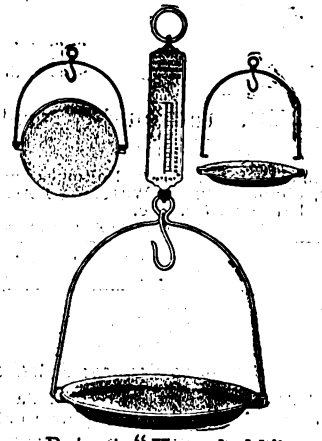


Family Balance, No. 50.



Circular Balance, No. 20.

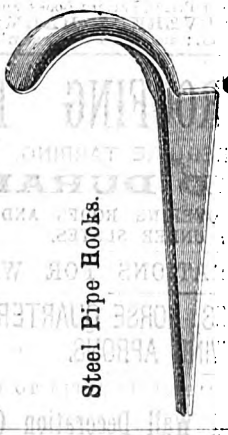


Patent "Household" Balance, No. 12.

Spring Balance.

Box Iron.

"VICTORIA" MEAT MINCER.



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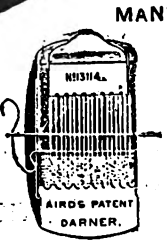

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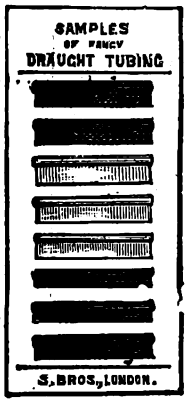

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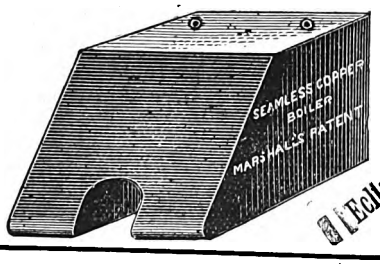

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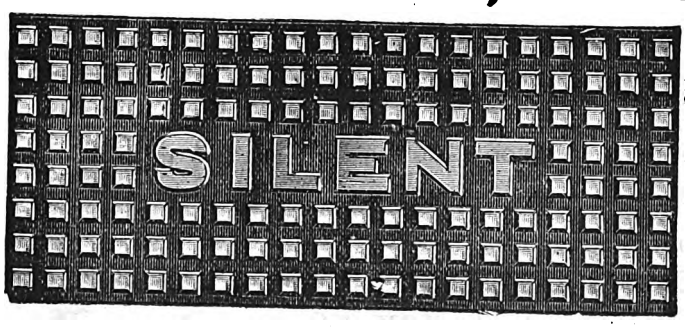

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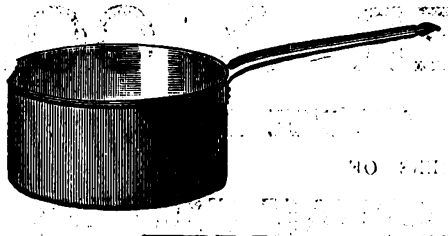

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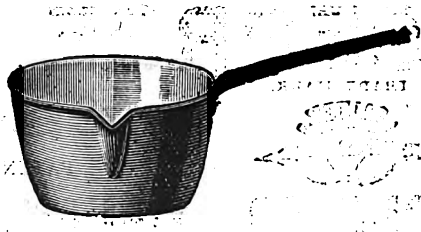

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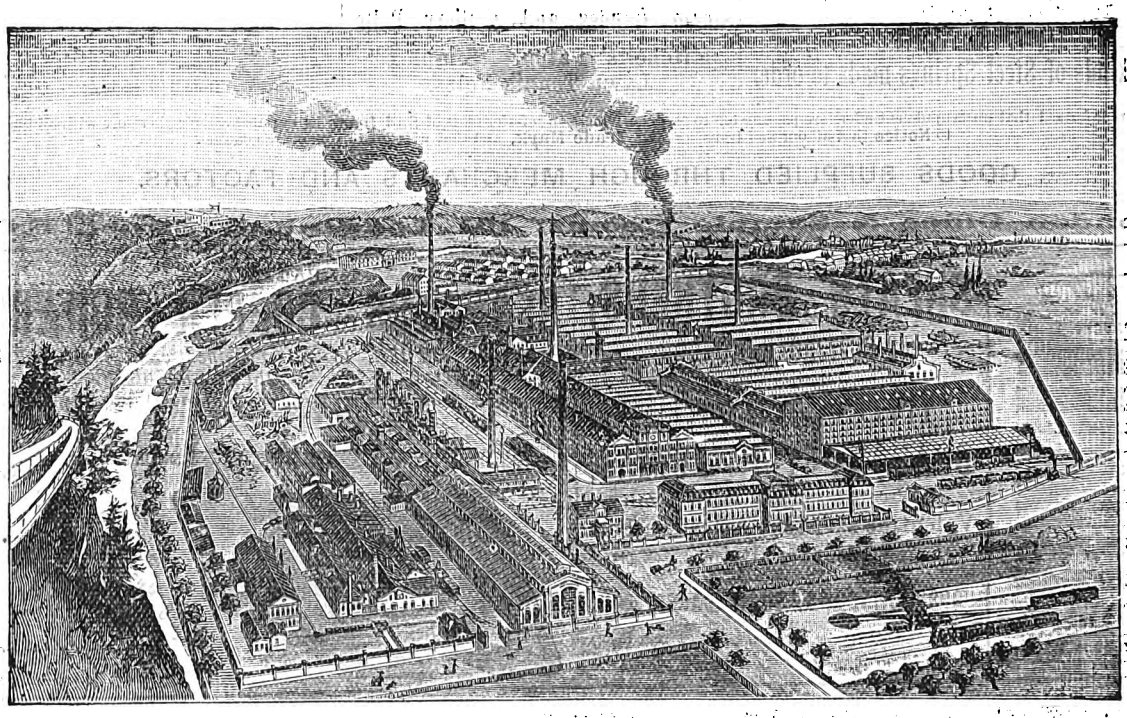

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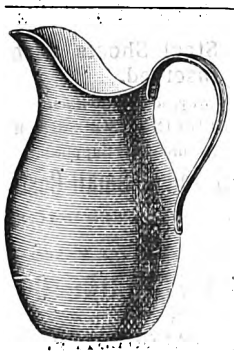

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JUNIOR ASSISTANT or Improver; abstainer preferred; to reside at business house. Applicants must be well educated and in good position, and give full particulars, stating if served apprenticeship, age, height, send photo, wages expected, references, when at liberty, why leaving last place, to Wood & Co., Ironmongers, Bournemouth.

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WANTED, Assistant, as Second Hand for Furnishing and General; must be smart, thoroughly reliable, good salesman, window-dresser, stockkeeper, &c.; none other need apply. State age, references, experience, salary, and send photo (which will be returned), T. Ballinger, Ironmonger and Hot-water Engineer, Newton Abbot.

WANTED, at once, for permanency if suitable, a good practical Whitesmith, Bellhanger, &c, for General work of shop, and also to repair Cycles. Also vacancy for Junior Assistant; must be sharp, respectful, and reliable. W. & J. Honeyfield, Ironmongers, Monmouth.

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WANTED, in a Wholesale Ironmonger's shop (London), a handy young man, say about 18 or 20, as Locksmith, and to fill up time in the warehouse; must be a good key-cutter for lever work, &c.; constant employment for a steady respectable man (no forge-work required). Also Junior hand, must be well up in Black and General, and used to the Counter trade. Apply, stating where last employed, age, and salary required, &c., to 104/27, Office of THE IRONMONGER, 42 Cannon Street, E.C.

WANTED, at once, a smart Junior Assistant as Second Hand; must be a good salesman and stockkeeper, who has served an apprenticeship to an Ironmonger; one used to China and Glass preferred. Apply, 201 Brompton Road, S.W.

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WANTED, energetic Assistant; thoroughly experienced; Furnishing and General; quick ready-money trade; good salesman, window-dresser, stockkeeper; knowledge of earthenware preferred; full particulars, experience, reference, age, height, and salary required. "Industry," 10 Arley Hill, Bristol.

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WANTED, to Apprentice a Youth, aged 15½, to the Ironmongery trade; indoors. Apply, in first instance, to Robertson & Phillips, Ironmongers, Southsea, Hants.

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ASSISTANTS WANTING SITUATIONS.

1s. for 12 words; 6d. for every additional 10 words or less.

ASSISTANT; aged 22; good experience in General, Furnishing, and Builders' trade; good reference. Address, 106/36, Office of THE IRONMONGER, 42 Cannon Street, E.C.

ASSISTANT; General, Furnishing, and Builders'; height 5 ft. 9 in.; aged 22; 7 years' experience; highest references. W. Alexander, Fordingbridge, Salisbury.

ASSISTANT; 24; 8 years' London experience, General, Furnishing, Builders', China and Glass; at liberty. "Iron," 47 Corrance Road, Brixton, S.E.

ASSISTANT; General and Furnishing; good references; moderate salary. E., 15 Freelands Road, Bromley, Kent.

ASSISTANT; General, Furnishing, and Builders'; 20; 4 years' experience. A. C., 69 Clyde Road, Croydon.

ASSISTANT; 21; General, Furnishing, and Tools; good references and experience; abstainer; willing, window-dresser; can assist in office; at liberty. Warrell, Hoddesdon, Herts.

ASSISTANT; tall; aged 21; 7 years' high-class experience, General and Furnishing. F. E. Angel, Castle Grove, Torquay.

ASSISTANT; 30; 15 years' first-class London and country experience; good salesman, stockkeeper, and window-dresser. 108/39, Office of THE IRONMONGER, 42 Cannon Street, E.C.

ASSISTANT; Furnishing, Builders', Tools, and General 12 years' good experience; disengaged. Yeandle, 16 Finchley Road, Kennington Park, S.E.

ASSISTANT; 29; 13 years' London and country experience; good salesman, window-dresser, and stockkeeper. Apply, T. Emlyn Jones, Ironmonger, Penarth.

ASSISTANT; General, Furnishing; good experience and references; Kent preferred. J. Fordham, Port Vale, Hertford.

ASSISTANT or Branch Manager; 14 years' experience; used to workmen. "Iron," 12 Theobald Square, Rochester.

ASSISTANT; over 7 years' London and country experience, General, Furnishing, and Builders'; experienced with books, workmen, and travelling; good references; permanency desired. 105/13, Office of THE IRONMONGER, 42 Cannon Street, E.C.

ASSISTANT; Furnishing and Builders'; used to Tendering; very well up in the Seed trade. Alsyke, Kingston Cottage, Loughborough.

ASSISTANT; 20½; General and Furnishing; 5½ years London and country; good references. Day, 42 East India Road, Poplar, E.

ASSISTANT or Traveller; 9 years' experience every branch; would go abroad. B., 38 Broomhouse Road, Fulham.

ASSISTANT, aged 26, requires situation; thoroughly accustomed to Builders', Smiths', and Bookkeeping; could travel. 105/11, Office of THE IRONMONGER, 42 Cannon Street, E.C.

ASSISTANT; 23; tall; 10 years' experience in Agricultural, General and Furnishing; energetic; undeniable references; liberty in week's time. Millward, Post Office, Longton, Staffs.

ASSISTANT; 22; 7½ years' experience, General, Builders', Furnishing; 3 years in last situation; good references. Davis, 28 Culling Road, Rotherhithe, S.E.

ASSISTANT or Manager; good experience and reference; accustomed to good-class General, Furnishing, Builders'. 108/31, Office of THE IRONMONGER, 42 Cannon Street, E.C.

ASSISTANT; Furnishing and General; good references. "Iron," 90 Leverton Street, Kentish Town.

ASSISTANT; General, Furnishing, Builders'; 8 years' experience; first-class trade; aged 24; satisfactory reference; good stockkeeper and window-dresser; used to books and workmen. W., 22 Hinckley Road, East Dulwich.

ASSISTANT; General and Furnishing Ironmongery; aged 25; 7 years' experience; good salesman, Window-dresser, and stockkeeper; well up in all branches, and used to workmen; good references; at liberty. "Iron," 15 Abyssinia Road, Clapham Junction, S.W.

ASSISTANT; 11 years' experience, General, Furnishing, Builders', and Agricultural; good references. Saunders, 3 Essex Road, Basingstoke.

ASSISTANT; 36; General, Furnishing and Builders'; London and country experience; excellent references; tall; single. Hellis, 34 Birdhurst Road, Wandsworth, S.W.

ASSISTANT; 6 years' General, Furnishing, Builders', and Agricultural; good references. C., 5 Allhalland Street, Bideford.

ASSISTANT; General and Tool trades; 9 years' experience; good references; aged 24. W. A. Byrne, 74 Caerleon Road, Newport, Mon.

ASSISTANT; Black and Builders'; good General London experience; thorough knowledge work and workshop appliances, stockkeeping, books; good salesman; country town preferred. 86/20, Office of THE IRONMONGER, 42 Cannon Street, E.C.

ASSISTANT; 24; 8 years' experience, General, Furnishing, Builders', and thorough practical knowledge Agricultural Implements, including Binders. V. H. Parsons, Cockcroft, Leominster.

ASSISTANT; 9 years' experience, General, Furnishing, Builders', and Furnishing. Mill, Booth, Albert Road, Whalley Range, Manchester.

ASSISTANT; 22; General, Furnishing, and Builders'; London preferred; at liberty October 9; excellent references. Evans, c/o Egleton, Ironmonger, Croydon.

ASSISTANT; General, Furnishing, and Builders'; 7 years' experience; aged 24; at liberty. 102/38, Office of THE IRONMONGER, 42 Cannon Street, E.C.

ASSISTANT; 11 years' experience, Furnishing, Builders' Ironmongery; energetic and obliging; good salesman; excellent reference; tall; at liberty. 13 New Road, Louther Hill, Reading.

ASSISTANT; 10 years' General, Furnishing, and Builders'; willing and obliging; first-class references; permanency desired. "Steel," 12 George Street, Colchester.

ASSISTANT; General, Builders', and Furnishing; 14 years' experience; excellent references; good salesman and stockkeeper. 111/9, Office of THE IRONMONGER, 42 Cannon Street, E.C.

ASSISTANT; 10 years' General and Furnishing. H., 49 Highfield Road, Doncaster.

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ASSISTANT; thoroughly reliable; 12 years' first-class experience, General, Furnishing, and Builders', accustomed to workmen; highest references. "Iron," 7 Charlwood Street, Pimlico, S.W.

ASSISTANT; 24; 8 years' experience, General, Furnishing, and Builders'; good references; at liberty. "Iron," 10 Legard Road, Highbury, N.

ASSISTANT or Manager; 13 years' experience in Builders', Black, Furnishing, and General; height 5 ft. 10½ in.; at liberty. Roe, 73 Wellington Street, Luton, Beds.

ASSISTANT; 25; General, Furnishing, and Builders'; 11 years' experience; excellent references; tall; disengaged; wages required 35*s.*; London preferred. G. W., 244 Vauxhall Bridge Road.

ASSISTANT; 22; understands Electric Lighting, Telephones, &c.; practical. 110/5, Office of THE IRONMONGER, 42 Cannon Street, E.C.

ASSISTANT; 9 years' experience, General, Furnishing, Builders', and Agricultural; tall; aged 23; excellent references; not afraid of work. Hyde, Oddfellows Terrace, Stow-on-the-Wold.

ASSISTANT; 21; General and Furnishing; good references; good salesman and stockkeeper; bookkeeper. F. L., 188 Elms Road, Clapham Common, S.W.

ASSISTANT; well up in all branches; aged 28. H. Yeandle, Brompton Ralph, Wiveliscombe.

ASSISTANT; 6½ years' experience in Furnishing, Builders', Tools, and Agricultural; good references. W. Warwick, Ramsey, Hunts.

ASSISTANT; General, Builders', and Agricultural; 12 years' experience; good reference. Etherton, Commercial Road, Guildford.

ASSISTANT or Manager; General, Furnishing, and Builders'; 17 years' experience; excellent references. W. N. Spindloe, High Street, Highworth, Wilts.

ASSISTANT; 11 years' experience, General, Furnishing, and Builders'; highest references. Meyrick, Shifnal.

AS Assistant; Furnishing and General; good experience; excellent references. W., Stanley House, Pallister Road, Clacton-on-Sea.

AS Improver to the Tinplate-working; good references; Ironmonger's shop preferred; aged 19; willing. Frank Hellard, 34 Barclay Street, Bridgwater, Somerset.

AS Assistant; 5 years' experience; height 6 ft. "Iron," 153 Westgate Street, Gloucester.

AS Junior Assistant; 4 years' good experience in Builders', General, and Tools; good references; total abstainer. Address, X, 179 Severn Road, Cardiff.

AS Junior, under good man; Tinwork, Gas, Bells, Water, and General work; 7 years' abstainer. F. E. Wingrave, High Street, Shaftesbury.

ADVERTISER, 18 years' experience, Machinery, Tools, Iron, Steam-fittings, Oils, Mill-furnishings for railways, contractors, engineers, mines, paper-mills, thorough office knowledge, estimating and travelling. W., York Lodge, Oak Lane, Bound's Green.

ADVERTISER wants situation as Assistant or Manager (5 years in latter position) to the General, Furnishing, and Builders' Ironmongery; aged 29; married; height 6 ft.; good reason for leaving present managership. 61/40, Office of THE IRONMONGER, 42 Cannon Street, E.C.

AS Tinman, Gasfitter, and Zinc-worker, &c., and a good General hand in Ironmonger's shop. G. R., 62 Park Road, Crouch End, Hornsey, N.

ADVERTISER, with business abilities, and 20 years' practical experience in Sheet-metal Working, Plumbing, Gas, Hot Water, Sanitary work, &c., seeks responsible position as Manager or Foreman; active; aged 38; abstainer; testimonials. Particulars, 104/24, Office of THE IRONMONGER, 42 Cannon Street, E.C.

AS Improver; aged 18; accustomed to Locks, Gas, Bells, &c.; good reference. C. W., South Front, Dewsroad, Salisbury.

AS Warehouseman, Storekeeper, or Porter; thorough knowledge of trade; not afraid of work; good scholar and character. W., 6 Stafford Terrace, Castle Street, Reading.

AS Tinsmith and Brazier; good hand at Copper, Brass, Tin, and Sheet-iron work. Townshend, 53 Buchanan Road, Walton, Liverpool.

AS Junior or Improver; General, Furnishing, or Agricultural; 4 years' experience; good salesman. "Iron," 14 Catherine Street, Hereford.

AS Tinman and Jobbing Hand in Ironmonger's shop. Address, B. C., c/o Roffey, Horsham, Sussex.

CASHIER, Ledger Clerk, or some responsible position; 26; 11 years' experience, Wholesale and Retail; highest references. A., 25 Latimer Road, Forest Gate.

COMPETENT Assistant; 13 years' experience in two situations (lately as traveller and first counterman), requires engagement; highest references from present employers, Messrs. Coxeter & Sons. H. C., 2 Spring Gardens, Abingdon, Berks.

ENGINEER.—Fitter, used to Engines, Boilers, and Electric Light plant, seeks employment. A. T., 24 Shaftesbury Road, Hammersmith.

ENGINEERS.—£5 to anyone finding constant Job for a young man as Improver, Turner and Fitter; 4 years' experience. W. Warren, Church Path, Chertsey.

GAS and Hot-water Fitter, Locks, Bells, &c.; can fill up time on Tinwork; good reference. Dudley, 20 Westbourne Street, High Wycombe.

GAS, Bells, and Hot Water; young man wants job; used to the General work of Ironmonger's shop; constant; good references. G., 99 Glenthorne Road, Hammersmith, W.

GASFITTER, Bellhanger, and Locksmith.—Good Jobbing hand seeks permanent work around London or Southern Counties. 105/8, Office of THE IRONMONGER, 42 Cannon Street, E.C.

GAS, Hot Water, Bells, Locks, and General hand. A. B., 10 Museum Buildings, Green Street, Bethnal Green, E.

GENERAL Fitter, Builders' or Ironmongers' workshop; good character. H. Scott, Sunningdale, Ascot, Berks.

GAS, Bells, Locks, Stoves, and Light Forge work, used to the General work of Ironmonger's shop; aged 24. S. E. Barnes, Berkswell, Coventry.

GAS, Hot and Cold Water, Crank and Electric Bells, Locks, Ranges, W.C.'s, Zinc, Tin, and General Ironmonger's work; reliable. "Iron," 116 Upper Tooting Road, S.W.

GAS, Hot Water, good General Jobbing hand; aged 34; good references. 4 Cambridge Road, London Road, Croydon.

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GAS, Hot Water, Bells, Locks, Range, Forge, &c. W. S., 19 Lowfield Road, West Hampstead.

IMPROVER.—Wanted situation; just completed apprenticeship; General, Furnishing, Builders', and Agricultural; aged 19. B. W., 9 High Street, Stourbridge.

IRONMONGERS' Tinman, Bellhanger, Gasfitter, wants job. A. B., 19 Farwig Lane, Plaston, Kent.

IMPROVER; Plumbing, Gas, Hot Water, &c. C. M., 51 Hazelrigge Road, Clapham, S.W.

JUNIOR Assistant; aged 20; 5 ft. 8 in.; 4 years' experience, General, Furnishing, and Builders'; highest references. Farnborough, Stanley Road, Newport, Mon.

JUNIOR Clerk; 6 years' experience; good reference; aged 21. H. G., 3 Alexander Cottages, Poole Hill, Bournemouth, W.

JUNIOR Assistant; Furnishing, General, and Builders'; 5½ years' good experience; excellent references. W. T. B., 49 High Street, Maidenhead, Berks.

JUNIOR Assistant; 22; 4½ years' experience in General, Furnishing, and Builders'; good references. P., London House, Barnstaple.

JUNIOR Assistant; 4 years' experience in General, Builders', and Furnishing; good references; disengaged. 104/17, Office of THE IRONMONGER, 42 Cannon Street, E.C.

J. A. BIRKBECK, High Street, Stockton, can highly recommend his chief Assistant as Manager, Traveller, or First Hand; good salesman, stockkeeper, and window-dresser.

JUNIOR; 4 years' experience, General and Furnishing. 110/14, Office of THE IRONMONGER, 42 Cannon St., E.C.

JUNIOR or Improver; aged 18; 3½ years' first-class experience in General, Furnishing, and Builders' Ironmongery and Implement trade; good reference. D. O. Elias, c/o T. M. Daniel, Ironmonger, Cardigan.

JUNIOR Assistant (22), 5½ years' experience in General, Furnishing, and Builders', desires engagement; good references. J. Turner, Derby House, Buxton.

JUNIOR Assistant; 20½; 5 years' experience in General, Furnishing, Builders', and Shipping Ironmongery; disengaged. W. Peet, Hawthorne Villa, Hexham-on-Tyne.

LEADING Assistant, or Traveller; General, Furnishing, and Builders'; 13 years' experience; references. 110/26, Office of THE IRONMONGER, 42 Cannon Street, E.C.

LEADING Assistant in Builders', General, or Furnishing; good window-dresser and stockkeeper; 11½ years' London experience; aged 29; thoroughly competent to take charge; used to workmen. P. Reed, 24 Howards Road, Plaistow, E.

MANAGER or Leading Assistant; 11 years' first-class experience, Builders', Furnishing, and General; highest references; used to workmen; tall. Francis, Austin Friars, Stamford.

MANAGER or Assistant; General, Builders', Furnishing; 25 years' experience, all branches. Aston, 3 Moscow Road, Bayswater.

PLUMBER (Registered); good references; well up in all branches, Gas, Hot Water, Zinc, and Lead-laying, Crank, and Electric Bells, Pumps, and Sanitary work; willing to fill up time in General Jobbing of shop; low wages for constancy; any distance. Barrett, 59 Caversham Road, Reading, Berks.

PORTER seeks employment; thoroughly used to the Builders' Ironmongery, Kitcheners, Cast Goods, and Grindstones. G. K., 25 Montgomery Street, Church Lane, Hammersmith.

PLUMBER, Gas, Hot-water Fitter, Locks, Bells, and used to the work of Ironmongesr' shop; aged 35. Glasspole, Markenfield Road, Guildford.

PLUMBER, Gas and Hot-water Fitter, Wire and Electric Bells; used to Ironmonger's shop. A. W. G., St. Woollos Road, Newport, Mon.

PLUMBING, Gas, Hot Water, Bells (Electric or Crank), Range work; good General hand; aged 30. 19 Elm Road, Thornton Heath.

PLUMBER, Gas, Hot Water, Bells, Tinwork; accustomed to work of good Ironmonger's; good Joint-wiper own tools. "Plumber," 46 Vorley Road, Holloway.

SMITH, Ironmonger's Fitter, First Hand; all branches; aged 34. Thompson, 133 Ravenscroft Road, Penge, S.E.

SITUATION wanted, by thorough good workman, Smith, Gas, Hot-water Fitter, and General work of Ironmonger's Shop. A., 60 Hurst Street, Oxford.

SITUATION wanted as Manager or Leading Assistant; Furnishing, Builders', and Tools; accustomed to take entire charge; aged 26; 10 years' experience; must be permanency; highest references. 103/17, Office of THE IRONMONGER, 42 Cannon Street, E.C.

STOCKTAKINGS or Valuations; priced inventory if required; methodical; smallest possible hindrance to business; terms moderate; excellent reference. "Metal," 39 Selsdon Road, Croydon.

SITUATION wanted as Traveller or Salesman, &c.; 12 years' experience in the Gasfitting, Plumbing, and General Brassfoundry; aged 30. 107/19, Office of THE IRONMONGER, 42 Cannon Street, E.C.

STOCKTAKING Engagements solicited; good references. "Steel," 120 High Street, Lynn.

SITUATION wanted (London preferred) as Improver to Whitesmith, Gasfitter, and Bellhanger; 7 years' experience. Baker, Castle Road, Colchester.

SMITH (General) seeks permanency in Ironmonger's or Builder's establishment. Address, W. E., 8 Boundary Mews, Cornwall Road, Westbourne Park, W.

STOCKTAKING.—Advertiser, good references, open to temporary engagement for above, or making out accounts. For terms address 108/1, Office of THE IRONMONGER, 42 Cannon Street, E.C.

STOCKKEEPER or Warehouseman; 7 years' experience; aged 23. E. P., 62 Chetwynd Road, N.W.

SITUATION wanted by young man, 24, as Cashier or Secretary; 9 years' experience; thoroughly understands Double-entry Bookkeeping; at present with an accountant. 108/2, Office of THE IRONMONGER, 42 Cannon Street, E.C.

STOCKKEEPER or Warehouseman; good experience and knowledge of trade. S., 19 Clifton Terrace, Southampton.

STOCKTAKING Engagements solicited by experienced man. J. Flatman, 23 Clapham Common, London, S.W.

STOCKTAKINGS by experienced man; good writer moderate terms; reference to well-known valuer. 172/49, Office of THE IRONMONGER, 42 Cannon Street, E.C.

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AS Leading Hand.—Wanted, by an experienced Ironmonger's Assistant, a situation as Leading Hand, in or near London; a good salesman in the General and Furnishing trade, Stoves, Ranges, &c.; has been accustomed to a good West-end trade; 18 years with last employers; outdoors. A. J. P., 5 Great Western Road, Paddington.

SMITH; Hot and Cold Water, Gas, Locks, Lawn-mowers, General work of Ironmonger's; in or near London preferred. W., South Cottage, Grove Road, North Finchley.

TRAVELLER, with good connection amongst Ironmongers in Midland, Eastern, South Coast, and Western counties, requires engagement with first-class house; exceptional references. 101/21, Office of THE IRONMONGER, 42 Cannon Street, E.C.

THOROUGH General hand wants work, Gas, Bells, Hot Water, Baths, w.c.'s; Smithing to good Ironmonger. E., 26 Pembroke Road, Kilburn, N.W.

TIN, Iron, Zinc Plate worker; used to all kinds of repairs, odd work, stove-piping elbows, ash-pans, scuttle-linings, tallboys, &c.; good references. 110/25, Office of THE IRONMONGER, 42 Cannon Street, E.C.

TINMAN; good experience in work of Ironmonger's shop; New and Jobbing, Retinning, Gas, Locks, Bells, &c.; good references; permanency desired. "Metal," 30 Wiltshire Road, Wokingham, Berks.

TRAVELLER, thoroughly experienced, aged 36, with splendid well-established connection—London, South and West of England—among principal Merchants, Ironmongers, Stores, Builders', Railway Contractors, now open to represent first-class firm; salary (moderate) and expenses; doubled the turnover of present employers in 3 years; unexceptionable references. Address, "Representative," 24 Frederick Street, Birmingham.

TOOLS, Cutlery, &c.; 6 years' experience; aged 24. R., 7 Sussex Place, South Kensington.

TINMAN, Gas, Bells, Hot Water; good General hand. 5 Alma Road, Romsey, Hants.

TO Manufacturers.—A practical man, many years' experience in estimating and piecework, desires berth as Managing Foreman for Builders' Constructional and Ornamental Ironwork, Casements, Ranges, and General Engineering; first-class testimonials. 109/24, Office of THE IRONMONGER, 42 Cannon Street, E.C.

WANTED, situation; used to Gas, Bells, Hot Water, Range work, &c.; 7 years' experience. C. Cornwell, 18 Wood Street, Brighton, Sussex.

WANTED, situation as Tinman in Ironmonger's shop, where one or more are kept preferred. F. Barnfield, Bewdley.

WANTED, by a thorough handy General Smith, used to Ironmongers' and Builders' work; a total abstainer. R. T., 142 Church Street, Croydon, S.E.

WANTED, good commission, to work with another, by Traveller calling on Ironmongers, Furnishers, and Stores; accounts open. 105/23, Office of THE IRONMONGER, 42 Cannon Street, E.C.

WANTED, situation as Improver; used to Gas and Water Fitting, and General Repairs of Ironmonger's shop. H. Manning, Bishop's Stortford.

YOUNG man, abstainer, seeks re-engagement; 2 years' experience, General; London or suburbs preferred. Warmington, Lyme Regis, Dorset.

MISCELLANEOUS.

4s. 6d. for 50 words, and 6d. for every additional 10 words or less.

OILS, Paints and Colours.—Wanted, the services (not necessarily exclusive) of a gentleman thoroughly experienced in these trades; must be a good correspondent, and know the above-named branches practically. Apply, 177/73, Office of THE IRONMONGER, 42 Cannon Street, E.C.

ADVERTISER, with thorough knowledge of the Hardware trade, and first-class London connection with best Export and Wholesale firms, desires Agency for a good manufacturer. Dudley, 105 Upper Thames Street, London, E.C.

AGENCIES wanted, by Traveller having connection, for American goods, tinned and enamelled cast-iron holloware, builders' castings, Sheffield, galvanised, and japanned goods, German hardware, &c.; state terms. 54 Lombard Street West, Dublin.

A GENTLEMAN, with London experience, and at present managing a large business, desires to negotiate with a good firm with a view of representing and managing London business; replies treated in confidence; highest possible references. Address, 109/19, Office of THE IRONMONGER, 42 Cannon Street, E.C.

AGENCY wanted for Germany by a well-known Berlin firm with undeniable references in England and abroad; also security if required. Only first-class houses need address W. Postlagernd, Postant 16, Berlin S.O.

A GENTLEMAN, calling periodically upon all Gasworks in Lancashire, Yorkshire, and Cheshire, wishes to represent firms having goods to offer connected with this trade. Address, No. 21, 41 Corporation Street, Manchester.

AGENTS wanted, throughout the United Kingdom, to push first-class Machinery Oils, commanding a large and successful sale amongst steam-ships, mills, foundries, mines, &c.; liberal commission. Box 22, Post Office, Liverpool.

WHOLESALE Agents required for Twist Drills, Reamers, Cutters, &c. Address, N. M. 728, c/o Haasenstein & Vogler, a-G., Frankfort-on-Main.

WANTED, Manufacturers' Agent, for sale of school-bags, market and shopping bags, door-mats, hearth-rugs, carpet-squares, &c., on commission; ground North-Eastern counties. Apply, 108/34, Office of THE IRONMONGER, 42 Cannon Street, E.C.

ADVERTISER wishes to hear of a firm of good repute to consult with and undertake the manufacture of a new Patent Metallic Bedstead. Apply, in first instance, to G. M., c/o 438 Regent Road, Salford.

PATENT for Sale.—A new method of Warming Rooms and Effecting a Saving in Coal; patent can be bought outright, or manufactured on royalty. J. H. Knight, Barfield, Farnham.

ADVERTISERS, with facilities for prompt and cheap production of Cast and Wrought Ironwork, would be glad to hear from Inventors and Holders of Patents with a view to the manufacture of their specialties. Address, 25/10, Office of THE IRONMONGER, 42 Cannon Street, E.C.

WANTED, a 2-horse heavy Iron Roll, second-hand, in good condition, for rolling ridings. Apply, giving price and particulars, to Gibson Andrews, Woburn, Beds.

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MISCELLANEOUS—cont.

STONE-BREAKERS, Mortar-mills, Disintegrators, and Concrete-mixers; as good as new; cheap; can be had on hire, with option of purchase; a 6-horse power Portable Engine. just been overhauled and painted, on iron wheels, price £60. S. Mason & Co., Stone Breaking and Grinding Machine Makers, Brandon Street, Leicester.

TO Clear Stock.—Roofing Felt, the very best that can be manufactured. Rolls 25 yards long, 32 inches wide—No. 1, 3*s.* 9*d.*; No. 2, 5*s.*; No. 3, 6*s.* 9*d.* per roll net Carriage paid on 6 rolls all over the United Kingdom Samples post free. E. Robertshaw & Son, Lumby Works, Manchester Road, Bradford, Yorkshire.

TO Electrical Engineers and others.—Small stock of Low Moor Iron in special small sizes; the whole to be sold cheap to clear; also one bar (13 feet) best Double Shear Steel, 3 inches by 3 inches; sizes and quantities, sent on application. Edmunds (Limited), Iron Merchants, Halifax.

TO Hardware Shippers.—A large quantity of Wire and Bristle Brushes, suitable for Brassfinishers, &c., at 20 per cent. under net cost; patterns on view at 148½ Fenchurch Street. For particulars apply to Chas. H. King, Shipping Agent, 148½ Fenchurch Street, E.C.

SURPLUS STOCK (Brand New).—To be cleared out 250 rolls Roofing Felt, the very best that can be manufactured; rolls 25 yards long, 32 inches wide:—No. 1, 3*s.* 6*d.*; No. 2, 4*s.* 6*d.*; No. 3, 6*s.* per roll net; carriage paid on 4 rolls all over the United Kingdom; samples post free; also Rot-proof Felts; 5 per cent. cash discount on £2 upwards. Charles Longbottom, Nafferton Works, Hull.

IN THE MATTER OF LAWRENCE THOMAS & CO. (LIMITED).

NOTICE IS HEREBY GIVEN that the Creditors of the above-named Company are required on or before the 16th day of November, 1893, to send their names and addresses and the particulars of their debts or claims, and the names and addresses of their Solicitors, if any, to Messrs. A. N. Frewer and G. W. Bake, the Liquidators of the said Company, at 34 Nicholas Lane, London, E.C., and if so required by notice in writing from the said Liquidators, are by their Solicitors to come in and prove their said debts or claims at such time and place as shall be specified in such notice, or in default thereof they will be excluded from the benefit of any distribution made before such debts are proved.

Dated this 29th day of September, 1893.

HARWOOD & STEPHENSON,
31 Lombard Street, London, E.C.
Solicitors for the above-named Liquidators.

THE IRONMONGER LIST
OF
TRADE MARKS AND BRANDS

Is Published FOUR TIMES in each Year.

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42 CANNON STREET, LONDON, E.C.

Printed by SPOTTISWOODE & Co., New-street Square; and Published at the Office, 42 Cannon Street, in the City of London.—Sept. 30, 1893.

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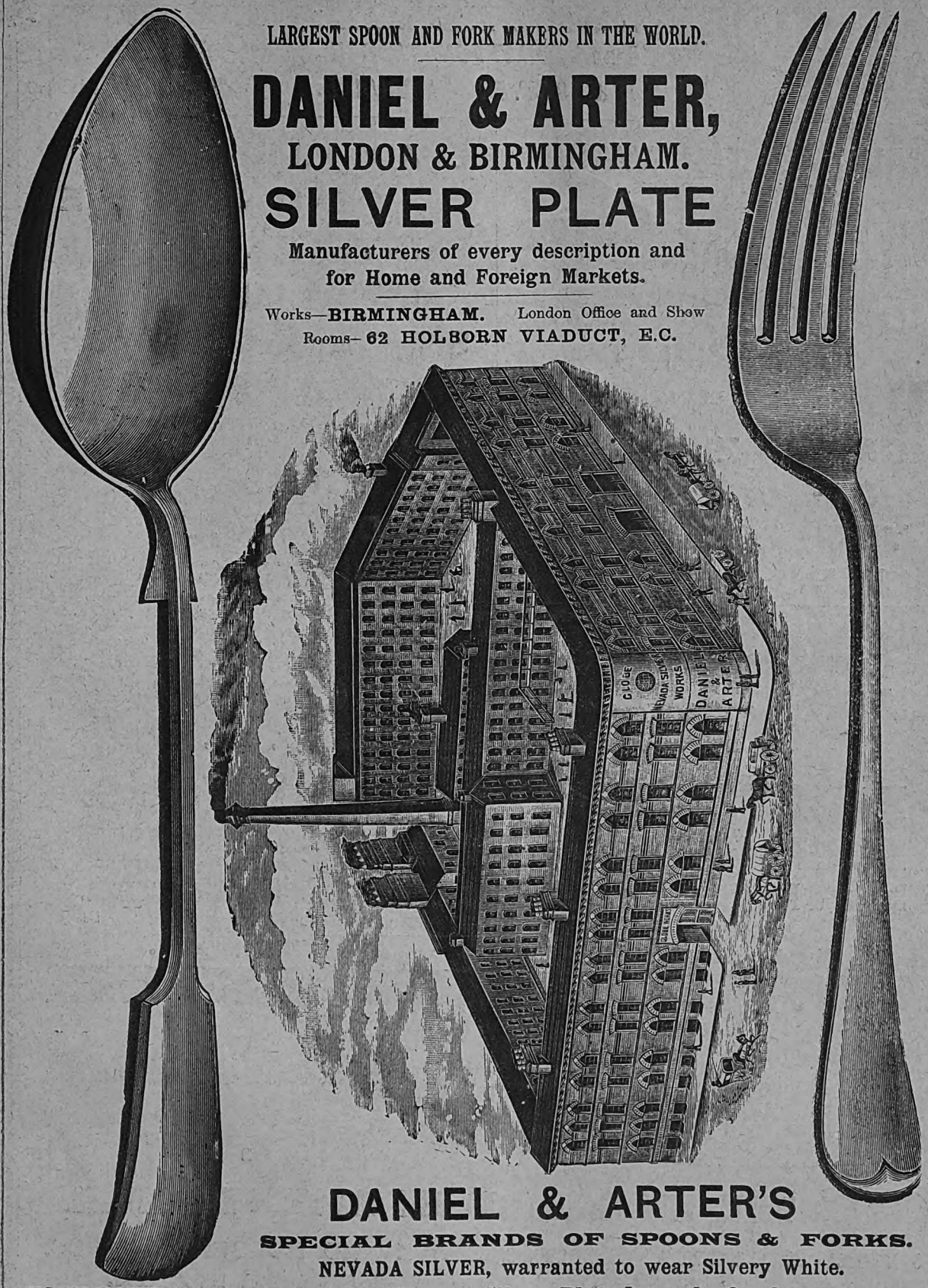

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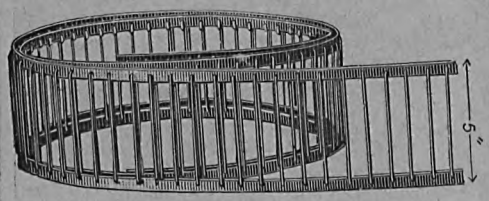

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